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# Contents

## Articles



## Review

## Brief Report

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Article

# Swings and slippery slopes: Reflecting on processes of higher education curriculum in the space of globalization and a pandemic

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**Abstract:** The Asia-Pacific is the most expansive region for social services and health care, ranging from New Zealand in the south to the border of the Russian Federation in the north. Professional education in human services, social work, and allied health is rapidly expanding in this region and globally as the power and influence around these professions 'swings' between different countries in the region. The globalization of social and health care issues is challenging professional higher education and accreditation processes to adjust to producing education graduates who are global professionals, multi-lingual, culturally responsive, and able to work in diverse community contexts and within the 'slippery slopes' of social and economic change. This article explores the development of a new social work curriculum and course for an international higher education provider that was implemented in 2022 and aims to meet the challenges of intercultural learning and skills development in the new plural-lingual and fragmented global contexts. The ethnographic study reveals that education organizations and educators can advocate for and develop globalized, internationalized social work and social care curricula in this unsteady context when supported to do so by regulatory authorities.

**Keywords:** social work; globalization; plural lingual; ethnography; social care; higher education

## 1. Introduction

The International Federation of Social Work (IFSW) and partner organisations launched a global strategy to advance social work education, updating the Global Standards for Social Work Education and Training, resulting in a worldwide minimum set of standards [1]. The campaign to build minimum standards formally commenced in 2018 when IFSW established an Interim Education Commission because several IFSW member organisations argued that people working in social work education needed a global policy that could be used as an advocacy tool for improving education in their countries.

*"The new standards provide a crucial opportunity for the global social work community to work collaboratively towards fostering new ideas and encouraging practice that lifts the baseline of social work education"* [1].

The main objectives of the IFSW Global Standards are to:

- Ensure consistency in the provision of social work education while appreciating and valuing diversity, equity, and inclusion.
- Ensure that social work education adheres to the values and policies of the profession as articulated by the IFSW and IASSW.

- Support and safeguard staff, students, and service users involved in the education process.
- Ensure that the next generation of social workers has access to excellent quality learning, opportunities that also incorporate social work knowledge deriving from research, experience, policy, and practice.
- Nurture a spirit of collaboration and knowledge transfer between different social work schools and between social work education, practice, and research.
- Support social work schools to become thriving, well-resourced, inclusive, and participatory teaching and learning environments [2].

*"The Global Standards aim to capture both the universality of social work values and the diversity that characterises the profession through the articulation of a set of standards which range from the prescriptive to the aspirational. While acknowledging the overarching objectives, the reality is that the social work and human services education experiences and policy frameworks vary significantly across the Asia Pacific regions"* [2].

### 1.1. Social and health care education in a post-pandemic world

The impact of moving social and health services, communications, and processes online during the pandemic, with workers, clients, communities, and management only used to face-to-face services, has been challenging for all the 'care' professions. Remote or distant working—workers being based at home or in restricted service spaces—was something people were not trained for or necessarily supported to do. However, there are positives in the development of remote working for social work, including the flexibility and independence of the work. Clients from groups such as younger people, women, older men, and children are accessing social and health services in greater numbers, ensuring that more and more people are receiving the financial and emotional assistance they may need [3].

The physical distance created by using technology can create safety during a disclosure of personal circumstances, and recent research has revealed that a mix-mode delivery of social services may be the most beneficial to individuals and families [3,4]. Social services education similarly had to 'pivot' to online delivery of the education content and skills development, and research has revealed the significant stress on educators and students during 2019–2021 [5], although again, there are positives in what is now termed 'hybrid' education delivery being more accessible across urbanized and regional communities, specifically in the Asia Pacific.

### 1.2. Social work in the Asia-Pacific region

Asia-Pacific is the most expansive IFSW and social work practice region, ranging from New Zealand in the south, to the border of the Russian Federation in the north and the Middle East. The major issues of focus in terms of social work responses and practices are child trafficking, climate change, disaster recovery, and societies in conflict. The current expansion of the sheer number and diversity of social services and of workers within the social work profession is profound and impacts many individuals, families, and communities by allowing clients to see themselves in the workers and services they access. Social work practice frameworks in the Asia Pacific regions are advocating an eco-social approach to a social contract requiring key actions and commitments from all nation states in relation to five equally considered dimensions of sustainability: people, planet, prosperity, peace, and partnership.

Discussion of the diversity of social work practice frameworks in the Asia Pacific region commences with how the term 'Asia Pacific' includes many countries and territories in Southeast Asia, East Asia, Polynesia, Australia, New Zealandia, Melanesia, Micronesia, and South Asia. There have been significant changes in this region in the past 50 years, with the region experiencing economic growth, although volatility and stagnation have characterised recent economics in Japan and Taiwan [6]. Regarding social change, the transformation of traditional cultural, social, and familial structures is widespread with the growth of the middle class and the rising influence of social entrepreneurs and non-governmental organizations. Traditional values such as filial piety and familyism have weakened, and values such as individualism and social justice have taken hold among younger generations. In terms of politics, there has been the collapse of old western colonies, the weakening of monarchies, and a retreat of communist ideologies, with a growing emphasis and international pressure for the rule of law, democracy, and civil society [6].

Social work, as a part of this regional transformation, is often seen as an instrument for creating social stability and/or social control. Social work is also regarded as an important tool of governments for social development, social justice, and human rights, but there is tension over whether the goal of social development should focus solely on economic growth or the development of civil society [6]. The major criticism of Western social work theories is that they are grounded in individualistic ideologies that are not applicable to Asian societies, which have cultural and political histories of collectivistic frameworks. Western interventionist practices are also increasingly challenged by Indigenous populations whose 'ways of knowing' are at variance with white Anglo-Saxon culture [6].

*"For example, Western family therapies may need modification because Asians are not so expressive, and they tend to avoid interpersonal confrontation within the family… While community empowerment is perfectly legitimate in Western communities, protests against the government and civil disobedience may be regarded as subversive acts in Asia-Pacific countries without this democratic tradition"* [6].

Advocating and upholding human rights and social justice is the motivation and justification for social work across the globe and, more recently, in the Asia Pacific. The social work profession recognizes that human rights need to coexist alongside collective responsibility. Social workers across the Asia Pacific region work actively with all communities to support and be part of social development processes at micro, mezzo, and macro levels toward an eco-social and socially just world [7].

There has been a rapid and significant expansion of professional social work education in Australia, which also serves most of the Asia Pacific region, with a growth to 40+ HEPs in the past decade providing a 4-year Bachelor of Social Work and/or 2-year Master of Social Work (qualifying). Most social work students and graduates in Australia are originating from Asia Pacific nations, and the work of the AASW in terms of representing the profession, social justice advocacy, and professional social work accreditation has been active in terms of consultations and reviews of social work education standards and social work practice standards within

Australia, but this is failing to keep pace with change within the profession in the Asia Pacific region.

## 1.3. Higher education providers (HEPs)

Independent higher education in Australia exists via federal regulation from TEQSA and the Higher Education Standards Framework (Threshold Standards) [8], which underpin and provide assurance of quality and integrity in the delivery of Australian higher education. The standards were updated on 1 July 2021, with the commencement of the revised Higher Education Standards Framework (Threshold Standards) 2021.

These new standards allow private higher education providers (HEPs) to seek University college status, a new category which is both an operational and marketing opportunity for private HEPs to mirror public universities in Australia. **Table 1** outlines the current number of different types of higher education providers in Australia [8].

**Table 1.** Summary table of the national register.

| Provider category | *SAA | Non-SAA | Total |
|---|---|---|---|
| Higher education provider (HEP) | 12 | 130 | 142 |
| Australian university (Public) | 40 | 0 | 40 |
| Australian university College | 5 | 0 | 5 |
| Australian university of specialisation | 1 | 0 | 1 |
| Overseas university | 1 | 0 | 1 |
| Total providers | 59 | 130 | 189 |

*SAA = Self accrediting authority.

The recent context of higher education in Australia for all HEPs included having to respond to and operate within an ideological policy framework for both HE and VET set by the previous Abbott/Turnbull/Morrison LNP Federal government, which had been in power 2013–2022 [9]. Their policy framework profoundly influenced how the government has reacted to the education sector during the COVID-19 pandemic, essentially leaving them to be prevailing market forces [10,11]. In 2021–2022, there were significantly lower numbers of international students and a small increase in domestic student enrolments and post-graduate short courses, meaning lower income for all HEPs and an estimated loss of academic and professional staff positions in the sector during 2020–2021 [12].

WHO research on interprofessional education and collaborative practice in social and health care identified that creating accreditation standards for health and social care education programs needs to include clear evidence and the creation of policy and regulatory frameworks to promote collaborative practice as partnerships between education leaders, regulatory bodies, legislators, government leaders, researchers, and professional associations [13]. Barriers to this type of interagency collaboration in the development of professional practice frameworks and accreditation standards were identified as 1) differences in practice, 2) professional philosophies, 3) history of the profession, and 4) ideological and practical differences in professional education and education standards [14].

In Australia, there is a fragmented and inconsistent approach to social and health care accreditation standards and to practice standards, and these concepts are ill-defined and often lack accountability. Professions regulated under the NRAS are more explicit than the self-regulated and membership professions, such as social work. There are, and always have been, opportunities for greater consistency and collaboration across professions, and there are some indications of beginning collaboration between regulated health professional accreditation and regulatory bodies and national recommendations to reform standards in social and health care via recent royal commissions into aged care, disability care, child protection, and so on [14].

## 2. Materials and methods

### 2.1. Ethnographic research and curriculum development

Ethnography, derived from anthropology, is a research methodology that studies social, community, and/or organisational cultures and cultural sense-making. It is linked to inductive research as a focus on local interpretations, aimed at understanding an insider's perspective of the habits, norms, practices, rituals, and patterns of interaction of a group, community, or organisation. Ethnographic research methods are designed using different epistemological approaches, such as critical, interpretivist, and postmodernist, and include auto-ethnography or performance ethnography as guiding frameworks [14,15].

Two important methodological distinctions about ethnography relate to an objectivist approach, which is related to positivist research, with researchers claiming they can maintain objectivity and do not influence or interfere with people or activities under observation [16]. The postmodernist approach to ethnography and participant observation is related to social constructionism as an approach where researchers influence and affect the research setting and are very much a part of the process. Observational objectivity is neither feasible nor desirable—the researcher is part of the production of knowledge. The research described in this article has taken this postmodern approach [14,15].

Ethical issues for ethnographic research are not dissimilar to other forms of qualitative research: informed consent, guarantees of anonymity, and giving back to the organisation, are all issues to be addressed. Additional issues such as committing ourselves as researchers to long-term relationships and trust are especially important as we observe and hear things of a sensitive nature, and we may become a sounding board' for the participants. Van Maanen [17] describes the ethnographic researcher as "part spy, part voyeur, part fan, part member" [14]. This research was approved by the management committee of the HEP as the subject.

Observation is a method of data collection in which researchers participate in and observe events and actions within a specific research field. Participant observation involves the observer being a member of the setting in which they are collecting data. There are quite a few variations of this definition: participant observation as ethnographic research seeks to determine, 'what is going on here?' to better understand

and capture the context within which people interact. Firsthand experience in a setting allows researchers to be open to discovery and inductive reasoning rather than guessing about the context. The research may uncover things that routinely escape the awareness of the participant using a different method; it provides a chance to learn things that people may be unwilling to discuss in interview or survey-type investigations [14,15].

Document analysis is a systematic process for evaluating data from documents, including printed and electronic (computer-based and Internet-transmitted) material. Document analysis is data examined and interpreted to elicit meaning, gain understanding, and develop empirical knowledge about a specific topic or process [18,19]. Documents contain text (words), numbers, and images that have been recorded with or without a researcher's intervention, data that can be referred to as 'social facts', which are produced, shared, and used in socially organised ways [20]. Document analysis was used in this research in combination with other qualitative research methods, such as observer reflections and social or organisational data (publicly available), as a means of triangulation of data to confirm the phenomenon of new curriculum development within a new HEP within the international education context [21].

## 2.2. Data collection

This ethnographic research at IHM was conducted during 2021–2023 via the collection of curriculum and educational documents, archival materials, and artifacts at the Institute of Health and Management relevant to the research, including websites, curriculum documents, government standards, accreditation guidelines, minutes of meetings, policies and procedure documents, emails, social media, reports, organizational research publications, and in-house blogs. Observations of curriculum development documented included reflections of the researchers from meetings, emails, course development processes, course advisory meetings, organizational curriculum processes and reviews, TEQSA processes and reviews, AASW professional social work education accreditation processes, ACHSSW processes, NFEN processes and outcomes, ANZSWWER processes, and other national and international social work development processes (IFSW, etc.).

Data also included unsolicited feedback about curriculum processes and content from academic and professional staff and others via conversations, texts and/or emails. Student evaluations of teaching and learning in 2022 and educator reflections connect organizational processes with educational outcomes. The documents, observations, and reflections were all stored in MS Teams folders accessible by the research team of three (3) academics and the Academic Dean, who oversaw the new course development process within the organization.

The new Bachelor of Social Work (BSW) at IHM was written and developed during 2021, accredited by the AASW in February 2022, and approved for delivery by TEQSA also in February 2022. The BSW commenced delivery to cohorts of 100% international students from primarily East Asian countries in July 2022. To date, there have been three (3) intakes of the course, and the data and evaluations in this article pertain to the period up to the end of Semester 1, 2023.

## 3. Results

The following table outlines the categories of data collected, summarized, and analyzed by the researchers from the HEP as social work academics and with the required discipline processes and government frameworks. These data represent the complexities of new course and curriculum development within the Australian higher education system for professional degrees such as social work and nursing. The six categories of data, 1) organizational committees, 2) organizational document management, 3) organizational and academic communications, 4) organizational structure and supports, 5) external networks and support, 6) educator reflections, and 7) student surveys, reveal the extant efforts that must be garnered by many people to create a new course to provide to international students.

These data described in **Table 2** were available to the researchers online via the organizational MS Teams, email archives, organizational ICT, and software systems such as SharePoint. Relevant documents had also been stored on staff USBs. No confidential or commercial-in-confidence documents, information, or business analysis have been described here, and documents were accessed, perused, reviewed, and then summarized by the researchers in 2022.

**Table 2.** Categories of data collection.

| Category of data | Types of data |
|---|---|
| Organizational committees | Discipline/course working groups, course advisory (peer) groups, CDWG, CADC, academic board, board of directors. |
| Organizational document management | Content documentation, process documentation, internal document templates, TEQSA and AASW course submission templates, course and curriculum documents, planning documents, project management systems, |
| Organizational and academic discipline communications | Emails, zoom discussions, meeting agendas, meetings, meeting minutes, action plans, phone conversations, |
| Internal IHM organizational structures and support | HR, library and E-resources, learning designers, IT, executive management, other disciplines, champions. |
| External networks and supports | AASW, ACHSSW, ANZSWWER, NFEN, IFSW. |
| Educator reflections | Self-reflection of course delivery + peer observations & reflections |
| Student surveys | Survey of student satisfaction of unit delivery + resources + organizational performances. |

The academic (research) team met monthly during 2022 and as part of the academic team meetings, they discussed the themes and summarized the data, most specifically during September and October 2022 when all the relevant data was available. The following table summarizes the relevant data used to create the thematic analysis. **Table 3** summarizes all the documents collected that describes the processes of course and curriculum development that the academic team participated in. These data are numerous and complex to manage without significant organisational support.

**Table 3.** Research data on social work curriculum processes.

| **Organizational & discipline processes** | **Documents analyzed** | **Data summarized** |
|---|---|---|
| AASW accreditation processes and documentation | AASW Australian Social Work Education Accreditation Standards (ASWEAS), March 2020 version & V2.0 Updated August 2021.<br>AASW ASWEAS Field Education Standards, AASW Board Approved Version, April 2021.<br>AASW Australian Association of Social Workers Code of Ethics, November 2020.<br>AASW Family Violence Curriculum Best Practice Guide, April 2018. | Australian social work accreditation standards.<br>Australian social work accreditation processes.<br>Australian social work code of ethics.<br>Australian social work practice frameworks and standards. |
| | Emails (communications) from AASW Quality Accreditation & Credentialling division | Communications directing the accreditation processes and timelines and potential outcomes. |
| | IHM BSW—AASW ASWEAS Submission, July 2021 draft, September 2021 final version (IHM, 2021) | AASW ASWEAS required content, accreditation standards.<br>IHM and participants' interpretation of ASWEAS requirements, IHM and participants' responses to feedback about BSW content. |
| | Emails (communications) from AASW ASWEAS Accreditation Panel.<br>Written feedback (word document delivered via email) about IHM BSW—AASW ASWEAS Submission & IHM BSW Curriculum documents, email received by Head, School of Social Work on 6/9/2021. | Panel members' roles in conducting accreditation processes, their communication styles, their interpretations of accreditation processes and ASWEAS requirements, their decision-making processes, and outcomes. |
| IHM quality assurance frameworks | IHM Templates—<br>IHM Curriculum Development Procedure Plan, 2020 version.<br>IHM Curriculum Benchmarking template, 2020 version<br>IHM Curriculum template, 2020 version & 2021 version<br>IHM Curriculum Review Action Plan, 2020 version & 2021 version.<br>IHM Unit Guide template, 2020 version & 2021 version, example from Master of Nursing.<br>IHM Learner Guide template, 2020 version & 2021 version, example from Master of Nursing. | Purpose and consistency of templates.<br>Use of templates to create curriculum.<br>Version control processes and purposes. |
| | Discipline specific document and emails (communications) from IHM QA and curriculum development staff.<br>IHM Bachelor of Social Work (BSW) Curriculum Development Procedure Checklist.<br>Minutes of IHM CADC and Academic Board meetings (communications and decision-making),<br>IHM Staff Hub – organizational policies and procedures, Staff Hub—Home (sharepoint.com), accessed throughout 2021. | QA management and staff direction regarding managing the QA requirements of curriculum development. QA management and staff interpretations of QA and its relationships to curriculum development, government regulations (TEQSA) and discipline specific (social work) requirements. QA decision-making processes and outcomes and their impact on curriculum development and outcomes. |
| Federal government higher education policy and regulatory frameworks | TEQSA—Higher Education Standards Framework (Threshold Standards) 2021, TEQSA website, accessed online 2020–2021.<br>IHEA – IHEA responds to TEQSA Review—Making and Assessing Claims of Scholarship and Scholarly Activity, 14 December 2020. | Australian Federal Government policies and regulations, purpose, aims, changes, motivations, ideologies, policy period 2015–2021. Commentaries on HE policies and role of TEQSA—IHEA cautions that a narrow definition of scholarship will impact diversity and quality in Australian higher education. |
| TEQSA course approval processes | TEQSA letter—Evidence Requirements: Institute of Health & Management Pty Ltd accreditation of Bachelor of Social Work, dated 10 March 2021 including Attachment A—Evidence Table.<br>Confirmed evidence table for course accreditation (registered provider), blank version, version for Master of Nursing, IHM 2020, Social Work draft version, 2021 & final version 2021.<br>Emails between IHM and TEQSA re BSW. TEQSA letter—Re: Application for course accreditation—valid, Attachment A—Request for Information (RFI), dated 31 August 2021. | TEQSA regulatory decision-making about a specific course (BSW) for a specific HEP (IHM).<br>Government policies versus processes versus outcomes—consistency? |

**Table 3.** (*Continued*).

| Organizational & discipline processes | Documents analyzed | Data summarized |
|---|---|---|
| IHM CADC and academic board | Agendas and minutes of meetings. | Organizational (HEP) decision-making of academic and quality assurance matter relating to courses and curriculum. Process and discussion/ peer review are important, academic rigor is an individual matter (subjectivity) and is contested. |
| IHM academic staff responsibility and accountability structures and systems | Emails from and to—Executive Director, CEO, COO, CFO, Academic Dean, Heads of Schools, senior managers of HR, QA | Communication is ad hoc, directed by tasks and deadlines imposed by external factors. Content, process, outcomes, are all contested.<br>Role within the organization directs individual emphasis (content, process, discipline, outcomes) and professional advocacy. |
| IHM School and Discipline based structures and processes—IHM management | Emails from CEO, COO, and Academic Dean.<br>Executive Management Team meetings, agendas, and minutes.<br>IHM Strategic Plan 2021–2024. | Business ownership and management directs organizational processes, budgets, financial planning, reputation, compliance are paramount in a management model.<br>Planning is growth, income, marketing. |
| IHM School and Discipline based structures and processes—Curriculum development | IHM CDWG meetings, agendas, and minutes.<br>IHM 'Teams' (software) based systems and processes of information, messaging, documents, peer reviews, as October 2021 the following courses were being developed; Master of Nursing, Bachelor of Nursing, Bachelor of Social Work, Graduate Certificate in Advanced Nursing, Graduate Certificate in Nursing, Master of Public Health, Medical Career Advancement Program (MCAP), Dental Career Advancement Program (DCAP) Interns and DCAP Part 2. | Discussions and discourses around Heads of Schools peer support processes, and the reviewing academic courses and curriculum as peers. Head of School use of curriculum templates across diverse courses. Academic advocacy for discipline curriculum content and assessments, discipline purpose. |
| IHM School and Discipline based structures and processes—Staffing | BSW Proposed Academic Staff List July 2021.<br>Emails to and from HR.<br>Informal discussions regarding staffing, with and between Academic Dean, CEO, Heads of Schools.<br>IHM Executive Management agendas, minutes, discussions in 'Teams'. | Dialogue and discourses regarding staffing issues.<br>Management directives. |
| IHM School and Discipline based structures and processes—Resourcing | Emails to and from CEO, CFO, COO, HR, Librarian/e-Resources Coordinator, external resource providers, publishers, accreditation bodies.<br>Informal discussions regarding resourcing, with and between Academic Dean, CEO, Heads of Schools.<br>IHM Executive Management agendas, minutes, discussions in 'Teams'. | Dialogue and discourses regarding education resourcing.<br>Management imperatives, negotiations, outcomes regarding resources for courses. |
| Australian Council of Heads of Schools of Social Work (ACHSSW) | Accreditation Standards Bodies for SW Education Internationally, 2021<br>SW Field Education Internationally, 2021<br>Simulation in Field Education, 2021 | Dialogue, discussions, and discourses of national (Australia) social work as a profession. Discipline identity is contested and developing. Advocacy, policy, legal frameworks of accreditation and decision-making regarding professional social work education. |
| International Federation of Social Work (IFSW) | Global Standards for Social Work Education and Training, IFSW website, accessed from 6 May 2021. | Globalization of the social work profession, international versus national discipline discourses, discipline advocacy processes. Discipline based research, seminars, conferences. |

## 3.1. Student evaluations (all international students)

Seven (7) BSW Units of study were delivered to international students during Semester 2, 2022, and Semester 1, 2023, and **Table 4** summarizes the student evaluation items and responses, *n* = 32.

**Table 4.** Student evaluations.

| Item | Strongly agreed | Agreed | Neutral | Disagreed | Strongly disagreed |
|---|---|---|---|---|---|
| The unit content and resources, textbooks, readings, videos, exercises, and guidelines were of a high standard | 18 | 14 | 0 | 0 | 0 |
| The content was clearly connected to and supported the development of the knowledge and skills detailed in the Unit Learning Outcomes (ULOs) | 17 | 14 | 1 | 0 | 0 |
| The content was easily accessible and appropriate in terms of level | 16 | 15 | 1 | 0 | 0 |
| The Canvas page for this unit was easy to use, set up in a logical manner, used accessible language, easy to navigate, with user-friendly guidelines and supports | 19 | 13 | 0 | 0 | 0 |
| The online delivery of tutorials worked well, absence of IT issues, adequate levels of peer interaction, and effective communication | 10 | 19 | 3 | 0 | 0 |
| The unit was organised in a manner which was logical, intuitive, and accessible, content and topics were covered in a timely manner which ensured students were adequately prepared for assessment tasks. | 15 | 16 | 1 | 0 | 0 |
| The workload was appropriate for the course level and manageable in the specified timeframes, readings, exercises, preparatory work was appropriate and able to be completed in the time given | 11 | 20 | 1 | 0 | 0 |
| The learning resources and support provided for assessments were relevant, adequate, and provided in a timely manner | 17 | 14 | 1 | 0 | 0 |
| The unit assessments were clearly linked to Unit Learning Outcomes (ULOs) | 14 | 17 | 1 | 0 | 0 |
| The assessments were appropriate to the level of study in terms of complexity, knowledge, and skills | 18 | 14 | 0 | 0 | 0 |
| The facilitator's teaching approach was engaging, clear and focused on the content | 20 | 12 | 0 | 0 | 0 |
| The facilitator was responsive to student need—providing feedback, answering questions, responding to queries in a timely manner | 20 | 12 | 0 | 0 | 0 |

These quantitative responses to the student satisfaction survey resulted in a student satisfaction rating for the new course of 97.5%. The national average in Australian universities and higher education private providers for SES data in 2022 was 75.9, and prior to the pandemic, it was 78.5% [22]. The achievement of 97.5% of this academic team in the circumstances described here is impressive, even though the student cohort was low in number.

## 3.2. Student reflections

Twenty-four (*n* = 24) qualitative comments were entered by students into the student survey for the course in 2022 and 2023. The following ten student comments reflect all the issues raised by students.

Student 1: *overall everything was excellent and understandable.*

Student 2: *I'm so happy to say that I covered my 3 units in a very well manner as this was my first experience of virtual class, I want to express my gratitude to our course coordinator and unit in charge.*

Student 3: *Teacher A was always being there to assist us whether from an evaluation or learning viewpoint if I had if I had to suggest I believe the only issue I had was with the assessment submission process in certain cases I found it difficult to* *concentrate on one assignment when I had to submit another unit assignment on the same day.*

Student 4: *it would be better if the units in all semesters are properly scheduled like right now, we did 3 units even though we must do 4 per semester and I do understand it was because we were studying online but it would be better if it's not like this in future other than that it was a good semester.*

Student 4: *more group discussion, it would be better if the units in all semesters are properly scheduled like right now, we did 3 units even though we have to do 4 per semester and I do understand it was because we were studying online but it would be better if it's not like this in future other than that it was a good semester.*

Student 5: *Thank you very much for everything. I enjoyed every lecture. Talking about assessment comments, I learned a lot from them. For Human rights, Chinese re-education centres for Uighurs would remain the favourite topic to question why and search more about. For social care, I would still compare different policies, countries and of course the people in power. Thank you IHM. Thanks for everything.*

Student 6: *Thank you all very much for your efforts in helping me. I learnt a lot but was also very busy and hard to juggle things. My advice for visa was not correct from agent but I maybe should have asked more.*

Student 7: *The studies were interesting and hard, but I enjoyed it and I will be back. Thank you.*

Student 8: *It will be better if more interactive sessions were provided in class and more easy communications were used in teaching, it will also be informative if good BSW articles were provided as it will be helpful to begin with.*

Student 9: *Provide some textbooks.*

Student 10: *Sometime assessments were not clear and its bit hard to understand them and make it. Please make them a little bit clearer. Thanks.*

In summary, the main issues raised by students here relate to: 1) textbooks and resources; 2) difficulties of assessment; 3) learning activities being more interactive and group-based; and 4) semester-based scheduling of units of study. The main issue impacting international students specifically, which influences this feedback, is their need to balance work and study.

### 3.3. Educator reflections

These reflections form the main basis of the ethnographic analysis [14,15] of the curriculum and course implementation process described here. The three educators were primarily responsible for writing the BSW course, managing its accreditation, developing the learning resources, and teaching the course to new cohorts of international students in the period 2021–2023. The educators met every two weeks as pairs or as a group to plan and reflect, taking into account the action learning cycle [23] of planning, action, reflection, documentation, and then planning again. Given this was a new course with a relatively new HEP, the cycle was repeated in a two-week cycle for over two years.

1) Early-career lecturer and researcher

Things that worked well—A strength I believe I have brought to this role is my varied social work and program management roles over the last 25 years. I came into the team feeling valued and supported. I am flexible and can move from one project to another reasonably quickly. I enjoy the ability to work both on site and at home; it gives the position a level of flexibility that is respectful to my circumstances, such as the distance required to travel. Things that need improvement—I have had regular IT issues that I feel have been a waste of my time. The IT department has been very quick to respond; however, the problem has not always been fixed on the first attempt. Having access to up-to-date, peer-reviewed journals and the latest edition of the relevant textbooks is vital, particularly when writing a new program from scratch. Overview of the BSW team: At present, there is a small team of staff in the BSW programme. I immediately felt welcomed and included in discussions and the development of the programme. I feel respected, and the environment is very inclusive. I enjoy having conversations with the team about the topics as well as how the BSW is going to move forward. There have been a lot of changes regarding student numbers and visa problems for students that have made planning challenging. Overview of the IHM experience: The IHM environment is fast-moving and ever-changing. Because I have come in at the ground level of the development of the BSW and MSW(Q) I feel like a valued member of the team. I am learning new systems, such as Canvas and the internal workings of IHM. There is a lot to learn. I feel like I am picking it up reasonably quickly; however, I still need to check in to make sure I am on the right track. I booked the librarian to run a library session with the students in week 3. Most of the students did not have library access at this time (me included). I would like to see students have access to the library upon enrolment, so they have access to resources right away.

2) Head of school and professor of social work

After 2 years of preparing the BSW curriculum and course framework, uncertainty and chaos reigned, leading to students enrolling and commencing studies. We did not know how many students there were, where they were from, where they would be, etc. We had tried to plan for all possibilities, on-campus, online, off-shore but ended up on the eve of semester accepting all 3 options for student enrolment. My role was to instill confidence in the educators, take each week as it came and ensure that everyone was aware of the macro and micro issues, keep staff and students up to date, and roll with what we were served, organisationally. Remembering to stick to academic frameworks that I know work, ensuring quality in education provision, and remembering accreditation requirements. Outcomes and assessments happened in week 6, week 10, then final assessments were planned, and final weeks of teaching were taught! Students have produced quality participation, assessments, and attitudes = success. 5 students finished the semester, 5 had to defer, and 2 left late because of visa issues. Other educators across IHM in other disciplines were experiencing the same, but we did not have a forum for these conversations except in the kitchen or corridor, this is normal for a large university.

3) Lecturer/BSW course coordinator, and early career researcher

Challenges: My time at IHM has been enjoyable but challenging at times. It has been characterised by a mixture of anxiety and excitement-anxiety around issues like student numbers/projections, visas, and, at times, the overall viability of the course. The excitement derived from being part of a team developing a bachelor's degree from the ground up. Planning for all possibilities—face-to-face teaching, hybrid models, and online models—is not straightforward. Although I am accustomed to a changeable work environment, this has been challenging at times. However, I think we have done well in this regard. I have taken on the role of course coordinator for the BSW. Although I enjoy teaching, I think it is good to take on new roles, as it keeps the work interesting.

Students— I cannot imagine how difficult it must be to study in a 2nd or 3rd language while managing issues like culture shock, insecure employment, and a lack of networks. I try to always be mindful of these challenges when we are designing and delivering content, marking assessments, and communicating with students. The social aspect of study was one of the major appeals of tertiary education in the 1990s. I acknowledge that online learning is very convenient for students who may have issues with transportation, time poverty, and work commitments, but I also wonder what is being lost in terms of life experiences, networking, personal growth, and the formation of friendships.

## 4. Discussion

The themes that emerged from the research data collected and summarized here emanated from a thematic analysis conducted by the researchers as the teaching of the new course occurred across two semesters. The five (5) themes connected to new course development at IHM were as follows:

- Education is business-organizational strategic and operational management and planning.
- Discipline (social work) identity: academic processes that promote discipline-specific content and information.
- Quality assurance is subjective; people drive processes and documents; models of QA; outcome-driven; success versus improvement.
- Curriculum content is contested—discipline change, discipline cultures, intergenerational tensions, and organizational tensions.
- Measuring outcomes: regulatory and accreditation approvals, QA staff, academic staff, students, other staff, and the communities (local and overseas).

Education is a business due to several issues. Independent HEPs are often privately owned by individuals, families, or other corporate entities, and as such, these proprietors of education institutions want financial gain; they work toward profit-making or, at the very least, aim at breaking even. Public HEPs (universities/colleges) were once seen as not-for-profit providers of universal higher education courses based on the social and economic common good of a society, but in recent decades in Australia, higher education policies have shifted [23]. This change has been ideological, where universities are now expected to be financially 'responsible; 'live within specific budgets', budgets were directed by the public, and government-based funding of courses has declined over time and is now supplemented or displaced by fee-for-service courses for international students [24].

Most universities have increasingly relied on income from fee-paying international students and international partnerships with private enterprises and independent education providers to generate course fees and development funds. COVID- 19 restrictions and a globalized education market have impacted this reliance in terms of reduced incomes from international students and from these partnerships. Recent commentary about the future of higher education in Australia laments this contraction of the sector and highlights the significant uncertainty around specific disciplines (humanities, IT, and business) and the outcomes of the higher education sector in terms of graduate and research outcomes [24,25].

Discipline identity, in this case social work professional identity within the higher education sector, is subject to organizational management processes for higher education curriculum and course development, often based in other disciplines such as health, law, and education, and includes an inherent tension between academic frameworks and quality assurance processes. The quality assurance frameworks of each organization manage the TEQSA regulatory processes and the discipline-specific accreditation processes.

There is co-existence between discipline academics and teams, accreditation bodies, regulatory bodies, and quality assurance divisions/departments within HEPs; however, it appears that the power and influence of quality assurance staff and processes are now driving academic processes. Yet, the outcomes of course and curriculum development are facilitated by academics and have significant academic impacts and outcomes. It is a tension of context versus content and a question of who manages the committees, the documents, the timelines, the resources, and therefore the outcomes.

The ACHSWE [26,27] has questioned the role of the AASW as an accreditation body regarding various aspects of the Australian Social Work Education Accreditation Standards, such as field education frameworks and processes, English language tests for students entering social work programs in Australia, and the power of the standards to set standards that are operational. The identity of the social work discipline is being contested, and the processes that drive accreditation are contested and complex, with so many private education providers now entering the market and potentially dominating professional social work education in the Asia-Pacific region into the future [28].

Quality assurance divisions and departments in HEPs manage processes and documents because TEQSA requires the higher education process of course production and delivery to be document-driven; however, the outcomes are content-based, with discipline-specific content, topics, assessments, learning resources, and graduate outcomes that make up courses and curriculum. What is 'quality' and 'what and how it assures' are subjective and contested concepts and become processes and frameworks designed by specific people for specific organizational purposes, not due to some generalized and well documented evidence base.

Curriculum design and content are contested [27,29]. There is limited agreement internationally and in Australia about the content, that is, the knowledge, evidence, research, and skills imparted to undergraduate and postgraduate coursework students. The ASWEAS has recently been reformed [30] and is now widely believed by HEPs and academics to be less prescriptive and directive in terms of required curriculum content than before this reform. The research outlined here demonstrated that adhering to the ASWEAS in creating a curriculum for international students is possible, but it is contested, and the standards and accreditation processes are clearly tailored for university contexts and not private providers or HEPs with a sole focus on international social work education.

This research did not answer many of the questions that now exist in international education in Australia, specifically about designing professional social work courses with an international focus and for international students. Course development processes and outcomes ultimately ask the question of HEPs: were we successful? producing graduates, quality teaching or learning, or meeting accreditation standards? This then directs us to ask what the measures of higher education success should be: business and finance measures, education and graduate measures, and academic (research and reputational) measures.

IHM can easily produce data based on the past five years of course development, expansion, and delivery that indicate success; however, in terms of a new Bachelor of Social Work in the context of expansion and internationalization as a profession within an ever-expanding education sector, there is much work to be done and evaluation to be considered in the coming period of 2023–2025, as pandemic restrictions have lifted and the Australian higher education policy framework shifts under the new Australian Labor government. There is much further research and regulatory reform in Australia that acknowledges social work education as a business and social work practices as a business. Social work graduate outcomes must reflect the preparation of students for 'real world' professional practices that are local, regional, and global.

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## References

1. International Federation of Social Workers (IFSW). The global agenda. Available online: https://www.ifsw.org/social-work-action/the-global-agenda/ (accessed on 29 February 2024).
2. International Federation of Social Work (IFSW). General meeting 2022. Available online: https://www.ifsw.org/general-meeting-2022/ (accessed on 29 February 2024).
3. Australian Institute of Health and Welfare (AIHW). Health of young people. Available online: https://www.aihw.gov.au/reports/children-youth/health-of-young-people (accessed on 29 February 2024).
4. Benton A, Tschantz J, Vandenberg A, et al. Perspectives of program participants on virtual human services during COVID-19. Available online: https://aspe.hhs.gov/sites/default/files/private/pdf/265571/vhsd-participant-perspectives.pdf (accessed on 29 February 2024).
5. Lischer S, Caviezel Schmitz S, Krüger P, et al. Distance Education in Social Work During the COVID-19 Pandemic: Changes and Challenges. Frontiers in Education. 2021, 6. doi: 10.3389/feduc.2021.720565
6. Shek DTL. Editorial: A Snapshot of Social Work in the Asia–Pacific Region. The British Journal of Social Work. 2017, 47(1): 1-8. doi: 10.1093/bjsw/bcx007
7. Cordoba S. IFSW-AP UN representative addresses UN-ESCAP Committee on Social Development. Available online:

https://www.ifsw.org/ifsw-ap-un-representative-addresses-un-escap-committee-on-social-development/ (accessed on 31 May 2023).
8. Tertiary Education Quality and Standards Agency (TEQSA). National register. Available online: https://www.teqsa.gov.au/national-register (accessed on 29 February 2024).
9. Pelizzon A, Young M, Joannes-Boyan R. 'Universities are not corporations': 600 Australian academics call for change to uni governance structures. Available online: https://theconversation.com/universities-are-not-corporations-600-australian-academics-call-for-change-to-uni-governance-structures-143254 (accessed on 29 February 2024).
10. Moy N, Paolucci F. Restructuring higher education funding in Australia during a pandemic. Available online: https://independentaustralia.net/politics/politics-display/restructuring-higher-education-funding-in-australia-during-a-pandemic,14086 (accessed on 22 February 2024).
11. Grozinger P, Parsons S. The COVID-19 outbreak and Australia's education and tourism exports. Available online: https://www.rba.gov.au/publications/bulletin/2020/dec/the-covid-19-outbreak-and-australias-education-and-tourism-exports.html (accessed on 22 February 2024).
12. National Tertiary Education Union (NTEU). Universities accused of 'sham contracting' as wage scandal in Australia's higher education sector deepens. Available online: https://www.abc.net.au/news/2020-10-16/university-wage-theft-case-hits-federal-court-union-claim/12771128 (accessed on 22 February 2024).
13. World Health Organization (WHO). Framework for action on interprofessional education & collaborative practice. Available online: https://www.who.int/publications/i/item/framework-for-action-on-interprofessional-education-collaborative-practice (accessed on 22 February 2024).
14. Bogossian F, Craven D. A review of the requirements for interprofessional education and interprofessional collaboration in accreditation and practice standards for health professionals in Australia. Journal of Interprofessional Care. 2020, 35(5): 691-700. doi: 10.1080/13561820.2020.1808601
15. Sarantakos S. Social Research. Palgrave Macmillan; 2013.
16. Angrosino M. Recontextualizing observation: Ethnography, pedagogy, and the prospects for a progressive political agenda. In: Denzin N, Lincoln Y (editors). The Sage Handbook of Qualitative Research, 3rd ed. Sage; 2005. pp. 729-745.
17. Van Maanen J. Tales of the Field: On Writing Ethnography. University of Chicago Press; 1988.
18. Bowen GA. Document Analysis as a Qualitative Research Method. Qualitative Research Journal. 2009, 9(2): 27-40. doi: 10.3316/qrj0902027
19. Corbin J, Strauss A. Basics of Qualitative Research, Techniques and Procedures for Developing Grounded Theory, 3rd ed. SAGE Publications; 2008. doi: 10.4135/9781452230153
20. Atkinson PA, Coffey A. Analysing documentary realities. In: Silverman D (editor). Qualitative Research: Theory, Method, and Practice. Sage; 1997. pp. 45-62.
21. Yin RK. Case Study Research: Design and Methods, 2nd ed. Sage; 1994.
22. QILT. 2022 student experience survey. Available online: https://www.qilt.edu.au/docs/default-source/default-document-library/2022-ses-national-report.pdf?sfvrsn=b8e30414_0 (accessed on 22 February 2024).
23. Brook C. What does action learning look like today? Action Learning: Research and Practice. 2021, 18(2): 89-90. doi: 10.1080/14767333.2021.1935058
24. Davis G. Why are Australian universities so large? In: Horne J, Thomas MAM (editors). Australian Universities: A Conversation about Public Good. Sydney University Press; 2022. pp. 41-54. doi: 10.2307/j.ctv31svrqv.9
25. Duffield L. Australian universities under threat from creeping corporatisation. Available online: https://independentaustralia.net/life/life-display/universities-under-threat-from-corporatisation,10842 (accessed on 7 June 2023).
26. ACHSWE. ASWEAS review. Available online: https://achswe.org.au/projects/asweas-review-submission/ (accessed on 29 February 2024).
27. ACHSWE. Arc engagement & impact submission. Available online: https://achswe.org.au/projects/arc-engagement-impact-submission/ (accessed on 29 February 2024).
28. Wallengren-Lynch M, Archer-Kuhn B, Earls Larrison T, et al. Its not a book; it's a Bok": Social work students' experience of using creative journaling practices as a pedagogical tool to develop transformative learning during the COVID-19 pandemic. Social Work Education. 2023. doi: 10.1080/02615479.2023.2292127
29. Tham P, McFadden P, Russ E, et al. How do we prepare students for the challenges of social work? Examples from six

countries around the world. Social Work Education. 2021, 42(4): 494-510. doi: 10.1080/02615479.2021.1976135
30. Australian Association of Social Work (AASW). Australian social work education accreditation standards (ASWEAS). Available online: https://aasw-prod.s3.ap-southeast-2.amazonaws.com/wp-content/uploads/2023/09/ASWEAS-March-2020-V2.2-Aug-2023.pdf (accessed on 22 February 2024).

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Article

# Joking relationships and humor among the Yorùbá of southwestern Nigeria in the twenty-first century

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**Abstract:** I argue that compromises are reached, and interpersonal relationships are negotiated and maintained among the Yorùbá people through joking relationships. I raise questions on how and when joking relationships can lead to interpersonal, interethnic or intra-ethnic conflict, inclusion or exclusion and the socio-cultural and legal consequences that these could generate. I use the hermeneutic and phenomenological methods to determine the impact of joking relationships on the violent crises that have characterized the twenty-first century Nigerian society. I conclude that whereas joking relationships are still socially acceptable Yoruba patterns of behaviour which have served the people well, the freedom that this practice enjoyed in the ancient times may now be coming under social and legal pressure in the socially and religiously sensitive modern Yorùbá and pan-Nigerian societies. However, the vacuum that may be created if joking relationship were to disappear may be filled by socially dysfunctional outcomes including depression and suicide.

**Keywords:** joking relationship; Yorùbá, southwestern; Nigeria; twenty-first century; social behaviour

## 1. Introduction

‘Two guys were discussing of their family experiences.
First Guy (proudly): “My wife’s an angel!”
Second Guy: “You’re lucky, mine’s still alive.”’

A young man died before his appointed time, but the Gateman of Heaven took pity on him and decided to give him his life back so that he could return to Nigeria. The young man burst into tears, pleading that he would rather go to hell than go back home to Nigeria.

‘The newlywed wife said to her husband when he returned from work:

“I have great news for you. Pretty soon, we’re going to be three in this house instead of two.”

Her husband ran to her with a smile on his face and delight in his eyes. He was glowing of happiness when she said: “I’m glad that you feel this way since tomorrow morning, my mother moves in with us (sic).”’

Culled from Laugh Now America online [1].

The three excerpts above, which are forms of jokes, are cited to show that joking relationship is global, and it represents the least scrutinized sphere of the human creation. It is encountered on a daily basis, and majority of people consciously and unconsciously get engaged in this socio-psychological dimension of human experience. For some reason, the topic of joking relationship among the Yoruba has not been given adequate attention in scholarly discourse especially from the African perspective. This paper fills this void. I examine anthropological writings on joking relationships represented in Radcliffe–Brown and their relevance to the Yorùbá socio-cultural experience. Anthropologists such as Labouret [2], Paulme [3], Peddler [4], Radcliffe Brown [5], Goody [6] have written extensively on the subject. Furthermore, Nigerian scholar, Obadare [7] has an article on ridicule and humour that touches on or could be classified as a form of joking relationship. In spite of these insightful publications on joking relationship, there are yet lots more that could be learnt from joking relationships especially among the Yoruba.

Joking relationship has been identified to be common among local and urbanized societies. In fact, it has been carefully documented that scholars have used more than fifty different phrases and terms to describe various aspects of joking relationships [8]. Apart from Africa, anthropologists have also identified such places as Oceana, Asia and North America where joking relationships are also daily affairs. While it could be said that joking relationships cut across ethnic and cultural boundaries, the reality of cultural relativism cautions that we must avoid hasty generalizations. It is safe for me however to observe that joking relationship has been used in creating humor and amusement among traditional and modern Yorùbá people of southwestern Nigeria for as long as they have lived. Yet, while it has been observed that joking relationship is widespread in Africa (Many writers on joking relationships coincidentally make reference to African experience. In fact, Radcliffe-Brown's article suggests that "…general theoretical discussion of the nature of these relationships may be of interest to readers of Africa" [5]), it is interesting that only an insignificant number of African scholars in disciplines such as folklores, literature, sociology, anthropology, and cultural studies have devoted their research to this very important phenomenon of Yorùbá cultural life. Furthermore, those scholars have based their theories on kinship relationship.

Obadare's [7] article shows that (together with ridicule), humor has been used by ordinary people in Nigeria to deconstruct and construct meaning out of a reality that is decidedly surreal. He thinks that ridicule and humor are forms of jokes, and then argues that humor should be incorporated into the civil society discourse, and suggests that doing so will enrich civil society's analysis by focusing on both the constructions of sociality and their associated politics, and the hidden spaces in which most of visible political action originates [7]. Obadare's argument follows directly an earlier work by Apte [9], who wrote a whole book on Humor and Laughter. It is not clear, however, that Obadare and Apte share the same view in their sociological analyses. Research carried out in the Niger shows that "transmitted informally from generation to generation, joking relationships are a tool for reconciliation and peace-building and could promote the cohesion and stability of families, ethnic groups and communities. They foster social equality with regard to both age and hierarchy and promote intergenerational dialogue" [10]. What is clear is that with issues raised in previous research efforts still being interrogated, and new areas ripe for exploration, it is undeniable that there is justification for further research work on joking relationships. My effort here is to fill the void.

In this paper, I restrict myself to a particular ethnic Nigerian society; the Yorùbá of southwestern Nigeria. This decision is borne out of certain considerations, three of which are more important to this paper. First, as I observed above, joking relationship has not received enough attention from African scholarly perspectives with regards to the Yorùbá cultural society. Interestingly, Radcliffe-Brown who is credited with popularizing the concept of joking relationship used African societies as his case study but never made reference to the Yorùbá. Second, going by the pervasiveness of the claim in socio-anthropological discourse, it is useful to ask if joking relationship could be an effective means of settling ethnic and religious crisis or violence that still riddles Nigerian society in general and the Yorùbá society in particular (This second reason seems to be more important due to the continuous crisis of rhetoric of ethnic and religious identities). For example, it is claimed that joking relationships could help to diminish conflict where there is social disjunction, thereby helping to maintain social equilibrium [11]. Due to the abuse and misuse of joking relationships, however, we must be alert to the possible socio-cultural and legal issues these could generate in the twenty-first century Nigeria in general and Yorùbá society in particular.

Third, with empirical evidence, and contrary to the position of some anthropologists, the paper will show that joking relationship goes beyond purely kinship relationship. I will argue instead that in the Yorùbá socio-cultural setting, joking relationship is a common phenomenon that is practiced everywhere and almost every time among family members and between neighbours and strangers. Contemporary experience has even shown that joking relationship in forms of standup comedy and jests have continued to be part of religious (especially among Christian churches) way of lightening "a dull moment" and making members' to be actively involved in the church ritual practices (Few Nigerian young men and women have identified themselves as Christian standup comedians, and few Pentecostal Christian churches like Redeemed Christian Church of God (RCCG), Living Faith Church (aka Winner's Chapel) and a host of others have accepted this practice as one of the means God could use to minister to His people).

## Brief historical description of the Yorùbá people

The Yorùbá people are one of the major ethnic groups occupying southwestern Nigeria. Oyin Ògunbà asserts that "the Yorùbá political history is that of history of migrations, conquests, settlements, and significant episodes in the life of communities" [12]. According to the CIA World Factbook, the Yoruba represent about 21% of the total Nigerian population, or over 35 million people [13]. According to William Bascom, "The Yorùbá of West Africa are one of the largest ethnic groups south of the Sahara, and in several ways, one of the most interesting and important peoples of Africa" [14]. While both Ellis and Smith agree with Bascom, Smith adds that the Yorùbá are neighbors of the Bini or Edo of Benin. Bascom further claims that "Yorùbá cities are large, and even the traditional ones are dense." They are one of the largest ethno-linguistic groups on the African continent. They occupy one of the six geo-political zones in Nigeria and they are known not only for farming, weaving, blacksmithing, tying and dyeing, trading, but also they are a well-educated and highly urbanized group of people. According to Salamone [15], "the Yorùbá have long been the most urbanized of all sub-Saharan people (Africa) and among the most urbanized people in the world."

## 2. Conceptual and theoretical approaches of joking relationship

Joking relationship has been loosely defined as “a relation between two persons in whom one is by custom permitted and in some instances required, to tease or make fun of the other, who in turn is required to take no offense” [5]. Elsewhere Radcliffe-Brown says joking relationship is an interaction that mediates and stabilizes social relationships where there is tension, competition, or potential conflict, such as between in-laws and between clans and tribes [5].” According to Goody [6], there are two main varieties of joking relationships namely: symmetrical and asymmetrical. In symmetrical type, each of two persons teases or makes fun of the other. In the asymmetrical type; A jokes at the expense of B and B accepts the teasing good-humoredly and without retaliating; or A teases B as much as he or she pleases and B in return teases A only a little. In different societies, joking relationships may take different approaches. In some societies it may be verbal, in others it may be horse-play and in some others, it might include elements of obscenity, and in others none. In certain cultures like Mali, it is called “Sinankuŋa”, among the Yorùbá people; it takes various semantic forms such as Àwàdà, Èfè, Òyàyà, òwékè, Awéèwá or àpárá, which are functional equivalents of the English “humor”, “amusement”, “joke” and “jest.

Joking relationships were initially conceptualized as a type of alliance [8]. As Jones observes, alliance theory was first developed by Emile Durkheim, but it was his nephew, Marcel Mauss [8] who gave it an expansive treatment. For Mauss, joking relationships have a psychological and material function. In “*Parentés à Plaisanterie”*, he refers to joking relationship as “Joking Kinship” [5]) and argues that exchange is a uniting factor among many types of social activities, including not only joking kinship but also potlatch [16]. Mauss appears to be furthering the Freudian theory of humor (and by extension joke), according to which “the psychic energy is occupied in repressing from consciousness, for example, feelings of aggression towards another person. And through unconscious joke-work, the energy formerly occupied by repression is released, and the aggression becomes expressible, in a now innocuous form, a joke” [17]. One of the earlier writers, Lowie [18], in his ethnographic experience of joking relationships among the Crow and Hidatsa, explains it as “privileged familiarity”. This “privileged familiarity” was also developed and pushed further by Radcliffe Brown in one his articles.

Goody [6], however, uses a different name for joking relationship which he labels “privileged aggression”. According to Goody, “the element of violence observed in Fiji by Hocart and among BaThonga, as well as by myself suggests that the term ‘privileged aggression’ is as appropriate a description as Radcliffe-Brown’s ‘privileged familiarity’”. Sheba [19] while citing Zenner [20] notes that information about inter-ethnic images can be derived from proverbs, folktales, jokes etc. Joking relationships found in proverbs have been connected to stereotypes. Incidentally, proverbs are, generally, the means by which the Yorùbá people bring out deeper meaning of “words’ intention”. It is no wonder that they make proverbs one important part of their day-to-day communication and part of their meaning-making adventure. They claim that “proverb is the horse (vehicle) through which words are conveyed: If a word (its meaning) is lost, proverb is employed in finding it”.

## 3. Functions of joking relationship

Radcliffe Brown [5] views joking as a way of upholding social order and that it is embedded in teleological and psychological explanations. He contends that joking can be used as "the means of establishing and maintaining social equilibrium". To him, joking relationship is a "peculiar combination of friendliness and antagonism" in which there is a charade of hostility and rivalry veiling a real friendliness between the two". He explains that "a marriage involves a readjustment of the social structure whereby the woman's relations with her family are greatly modified and she enters into a new and very close relation with her husband" [5]. This kind of relation involves both attachment and separation, both conjunction and disjunction. By this Radcliffe-Brown means that before marriage a man is an outsider to his wife's family just as they are to him. This is a 'disjunction' but it is not destroyed by marriage which leads to 'conjunction'. The social conjunction results from the continuance, though in altered form, of the wife's relation to her family, their continued interest in her and in her children [5].

This is also true of the Yorùbá kinship relationship, but only to a certain degree. It is true in the sense that, in most cases, a woman has no knowledge of whom she is going to marry. Hence, a saying among the people: Olórun nìkan ni ó mo oko Ìyàwó ojú ònà [It is only God that knows who the actual husband of an engaged woman will be]. Since the supposedly "actual husband" is unknowable to human beings, it is only by luck or accident that he could have had a previous close relationship with the family of his wife. What the proverb suggests is the uncertainties that surround engagement or betrothal. Even when both families are involved and grant their consent to the relationship, anything can happen along the way.

For one thing, either the man or the woman could change their minds. Or either of them may die before wedding day. Yet, however, from the moment a man and woman start a relationship that may eventually lead to marriage, the joking alliance or relationship begins. The only difference is that, in the traditional Yorùbá society, a man could be in social relation with his future wife without his knowing her as such. The nexus of relationship among the people in "Àjobí", "co-sanguinity" and the "Àjogbé," "co-residency," [21] which create social obligations [22] make for this possibility. This system has not changed significantly. Again, it is also possible for a girl to have been given out in marriage as a gesture to seal a friendship that has existed between two friends for a long time. If none of the party involved died, the marriage would eventually be consummated. Hence, a prior relationship has already been put in place. The Radcliffe-Brown's theory of disjunction, therefore, loses its applicability in this kind of setting. However, there are many situations that confirm Radcliffe-Brown's theory.

Whatsoever the mode of a man coming to be known to his wife's family, the joking relationships basically exist as Radcliffe-Brown has aptly pointed out. Thus a woman's younger sisters and brothers, older brothers and sisters naturally enter into joking relationships with her fiancée. Although, in certain cases, because of the culturally diverse nature of the Yorùbá people, there may exist a certain degree of differences. In some of these cases, a man is not permitted to disrespect his wife's older siblings or uncles and aunts, but may likely do so with his wife's younger siblings, her nephews and nieces. That is why a Yorùbá proverb says: Báàyí ni à sé nse ní ilé wa, Èèwò ni n'íbòmíràn [This is how we do in our family is a taboo in another family]. For example, in a certain Yorùbá family, a man who marries a woman automatically enters into two les, namely: first, as a son-in-law and secondly, by extension, as a son to the family of his wife. So, it is expected that he should be able to see his father or mother in-law at any time he wants just like the experience recorded by Radcliffe Brown [5] in Australia. On any special occasion that brings both the family of the man and the woman in marriage alliance together, a man is permitted to joke freely and "mess" with his wife's siblings (My personal experience, since I have been married shows to me that joking with my in-laws is a natural day-to-day affair. In most cases, my brother-in-law usually starts off the joking relationships).

It is also noted that joking relationship has the capacity of reducing tension and crisis that could lead to violence. Among the Yorùbá people, everybody jokes in one way or the other and joking is a daily affair, yet there are different kinds of individuals who are naturally gifted in casting jokes—clowns, professional jesters, those who mimic, and the parodists. There were and still are Yorùbá palace griots. These various groups of people, with whom the Yorùbá people are blessed, usually instigate and provoke laughter among the people. They joke and jest with relative ease and oftentimes, their jokes and jests know no boundaries. Joking relationships take place at cafeteria, "beer parlour, during games (especially "the Warri Game" [Ayò Olópón]), or soccer games, at funeral times, especially if the deceased is an elderly individual, and during marriages (during engagement in particular) and other types of occasions. Because these kinds of joking relationships exist among the people, it is reasonable to assume that violence would be reduced to its barest minimum.

As noted above, there is another kind of joking relationship that exists between two tribes. This is the case with the Yorùbá ethnic group in their relationship with the Hausa-Fulani ethnic group. This is so because of the trade link and cross-cultural diffusion through religion, especially with regards to Islam that connects the two together (Apart from the Northern part of Nigeria which is predominantly Hausa-Fulani ethnic group with strong Islamic religious culture, the Yorùbá people have as many Muslims as they have Christians in their midst). Many Hausa and Fulani live in virtually all Yorùbá cities and villages. A lot of the Yorùbá proverbs engage in stereotyping one another; these proverbs are used to tease intra-ethnically and, more often than not, inter-ethnically especially between the Yorùbá and the Hausa-Fulani.

This point of their long-term traditional inter-ethnic joking relationship may explain why the Yorùbá ethnic group used to be more closely connected to the Hausa-Fulani than the Igbo is to the Hausa-Fulani. Thus, it was rare for both the traditional Yorùbá and Hausa-Fulani to engage in serious inter-ethnic violence. The Civil War case could be shown as a good example here. The civil war was more of a war between two major ethnic groups—the Yorùbá and the Hausa-Fulani against the Igbo group who were planning to secede. My nuance is opened to a debate. This is just a personal observation, which does not adequately represent any general view. See the history of the civil war in Nigeria. Their relationship thrived in friendliness and mutual aid. My position is not to say that the Yoruba-Hausa-Fulani do not have inter-ethnic clashes. Unfortunately, modern trends have shown that healthy relationship is under political pressure and we have witnessed Yorùbá-Hausa intra-ethnic violence occur in cities such as Ilé-Ifè, Ságámù [23], Ògbómòsó, Lagos [24] and Èkìtì. Recent Yoruba suspicions about Fulani herdsmen kidnapping Yoruba people for ransom especially since Muhammadu Buhari has assumed the position of presidency of Nigeria are especially troubling. The clashes between the Fulani herdsman and the seven Ibarapa towns in Oyo State as well as what led to the activism of Sunday Igboho could also be cited as a case in point [25]. Radcliffe Brown observes that joking relationship between two tribes is apparently rare, and certainly deserves, as Mr. Pedler suggests, to be carefully investigated, but according to him, a similar relationship between clans has been observed in Africa. While this could be true of the clans in the Yorùbá society, it is also true of the relationship of the Yorùbá with the Hausa-Fulani ethnic tribe. According to Radcliffe Brown [5] though, "…both the joking relationship which constitutes an alliance between clans or tribes, and that between relatives by marriage, are modes of organizing a definite and stable system of social behaviour in which conjunction and disjunctive components, as I have called them, are maintained and combined".

## 4. Humor and its connection to joking relationship

The observation of the interconnection of humor and joking relationship has been carefully made by Apte in his research work on Humor and Laughter. His work shows how humor often provokes laughter and hence, humor includes the behavioural responses of smiling or laughter [9]. He agrees with anthropologists and sociologists who express the view that humor is useful for analyzing and understanding socio-cultural systems. He quotes Berger [26], who claims that "because humor is intimately connected to culture-codes, it is useful in providing insights into a society's values". Apte also cites anthropologist Hall [27] who contends that "people laugh and tell jokes, and if you can learn the humor of a people and really control it, you know that you are also in control of nearly everything else" (See Apte, Humor and Laughter, 17, here also Apte is quoting Hall (1959/1968:56) to strengthen his argument about the connection of humor to jokes or joking relationship). One could easily see how Hall connects laughter with jokes and later makes the two look as if they carried the same meaning as humor. As a matter of fact, Apte devotes the whole of chapter one of his book to examining the phenomenon of joking relationship and its applicability to cross-cultural analysis.

Apte begins chapter two of his book by making this interesting remark: "Perhaps no other humor-related phenomenon within the framework of social organization has been as extensively studied by anthropologists as the "joking relationship," which is one of the major manifestations of kinships". I earlier raised an objection against anthropologists' and sociologists' reductionism about the one-sided argument that joking relationship is only kinship-based. A careful cross-cultural examination, which is often advocated in ethnography, will show that such a one-sided way of thinking is no longer acceptable. In many African cultures, joking relationship is one of the common features of how people organize their lives; it is not just a manifestation of kinship relations.

## 5. Some examples of joking relationships among the Yoruba

Current literature on joking relationships in Africa is long on analysis but short on examples. This is not surprising. Earlier sociologists and anthropologists failed to either pay attention to practical lived experience of the people they studied or, due to language barriers, show little interest in this pattern of activities and lived experience that real people engage in to organize their worlds. Those scholars focus on theories rather than practice.

In this section, I make up for this gap in knowledge with some examples of joking relationships used as practical strategy on daily basis among the Yorùbá people and in their relations to other ethnic groups. Stereotypes used in proverbs [19], ritual of lampooning and ritual of obscenities characterize most of the jokes that Yorùbá people engage themselves with. What I try to do here is to present examples of the jokes with an attempt at a hermeneutical account of the jokes. But in doing this, I do not want to be swept off feet by my own interpretive bias. So, I will only examine the way Yorùbá people socially and religiously use everyday strategies, tactics and routines of 'playful' and 'magical' action to manipulate words, gestures, emotions, bodies, objects and images in an effort not only to control and comprehend their relationship with the world but also to change the way the world appears to them (I got this inspiration from my Harvard Professor Michael Jackson in one of the classes I took with him when studying for my Master of Theological Studies (MTS) at Harvard Divinity School between 2006 and 2008), particularly in times of transition, change or crisis.

## 6. Social forms of joking relationships

Peering through some proverbs used in stereotyping (a form of joking relationships) other ethnic groups especially Hausa-Fulani people, one cannot but be struck with the ways the Yorùbá create joking atmosphere, which may carry social and or legal implications. Here are three Yoruba jokes about the Hausa (All jokes and joking proverbs are italicized to differentiate them from their interpretations and reflections).

1) Wón ní kí Haúsá ó tàkìtì, ó ní ilè le, ta ní so pé kí ó ta àtayè télè! They tell a Hausa man to somersault, he says the ground is hard; who cares if he doesn't survive the somersault.

2) Kàkà ká dòbálè fún Gàmbàrí, bí a kú ó yá. It is better to die than to prostrate for a Gambari (another name used for Hausa in Yorùbá land). Sheba claims that Gambari is a derogatory term for Hausa. To bow or prostrate is a mark of honour for an elderly or people of high-ranking position. Here, Yoruba will consider it demeaning to prostrate for Gambari (Hausa).

3) Àpónlé ni málà; Haúsá ni Haúsá n jé. Mala is an honorific appellation; let us call a Hausa by his name (Mala is an abbreviation for Malam, the title of a Muslim Cleric). Since Malams are treated with respect due to their clerical positions and social statuses among the people, the Yorùbá people do not see the reason all Hausa should be treated as such. But this proverb is still in want of more research to really ascertain whether or not Mala and Mallam truly mean the same thing.

The above proverbs on the face value are hilarious and funny; people use them for social excitement and good feeling; but beneath the surface, they have ethical implications. In the modern society characterized by political conflict and mutual suspicion, they could also generate ethnic tension and legal challenges. For many people see such proverbs as expressions of ethnic or national superiority and prejudice, and subtle ways of discriminating against others.

The first two of the three proverbs above appear to denigrate the Hausa ethnic group and to devalue their humanity. Sheba interpreted the first proverb to mean "a disregard for the safety of this group of people". And in the second proverb, the Hausa are regarded by the Yorùbá as an inferior group. The third proverb is however different. It is used in situations where the speaker just wants to deemphasize title and honor. It happens that Mala is commonly used as an honorific title for many Hausa and Fulani people because many of them are experts in the Islamic religion as teachers of the Holy Koran. If many Yoruba people are also experts in Ifa religion so that they are referred to as Babaláwo, a similar joking proverb could be applied.

For example: Àpónlé ni Babaláwo, Yoruba ni Yoruba je (That is Babaláwo is an honorific title, let us call a Yoruba by his name). This notwithstanding, it is not indisputable that some users of the proverb have a disrespectful attitude to the Hausa ethnic group based on their interaction with the itinerant Hausa who trade in kolanuts and dry fish in Yorubaland and sometimes engage in begging for charity around Yoruba towns. But that disrespectful attitude to an entire people based on interaction with a few of them is misplaced. Among the Hausa people, we have shakers and makers of Nigeria today. We have business giants who represent Africa well in the world of industry and business. Therefore, any ethnic stereotypes are certainly misplaced, even if they are interpreted as coping mechanism among the Yorùbá to channel pent-up tension and feel happy.

Here are two jokes about the Fúlàní:

- Fúlàní se bí olókùnrùn wojà, tinú alábahun n be níbè. [Fúlàní limps into the market like a sick person what the tortoise intends to do is within him].
- Ohun tó jo ohun la fí n wé ohun, èso ìyeyè jo igi imú Fúlàní. [What looks alike are comparable, the fruit of the hog plum (Spondias lutae) resembles the nose of a Fúlàní].

The first proverb suggests that the Fúlàní are pretenders. Sheba says that as cow sellers, after selling their cows in Yorùbá land, they go about begging for alms as if they are poor. This proverb uses this practice of a few to characterize an entire group of people. The second proverb uses human anatomy to ethnically profile. However, while the second proverb appears to reflect an observation about physical features of a people, which can be replicated for any other ethnic group with its unique physical feature; the first proverb is not completely true. Many Fúlàní are very rich and wealthy and should be distinguished from migrant Fúlàní who serve as and are employed by Yorùbá people as herders. As I observed above, in contemporary Nigeria, many Fúlàní are employers of labour, and what is more, the current Nigerian president is a Fúlàní man. Sociologists, Haralambos and Holborn [28] argue that:

Stereotypes are oversimplified or untrue generalizations about social groups. For example, short people might be stereotyped as being unusually aggressive, and women as being weak and passive. When stereotypes imply negative or positive evaluations of social groups, they become a form of prejudice, and when they are acted on they become discrimination.

As sociologists aver, many of our rigid classifications often overlook alternative ways by which we could hermeneutically deal with those classifications. Thus, Camosy [29] observes that "our sinful natures appear to crave the sort of sensationalized 'us vs. them' narrative".

Note, however, that joking or stereotyped rhetorics are used among and by the Yoruba against other Yorùbá sub-groups as well. Therefore, it should not be thought that the Yoruba are intentionally biased against other non-Yoruba ethnic groups. For example, not a few proverbs are in continued use among the Yorùbá, and such proverbs are extremely demeaning to sub-Yoruba ethnic groups which could potentially lead to internal crisis if not violence. However, there is a general understanding among the people, concerning the largely innocuous character of such joking proverbs. The following are three of such proverbs that target Oyo Yoruba people:

1) Èèdè ni Òyó n toro, kójú tó mó won a ti gbalé lówó eni [The Òyó only begs for (the use of the) passage or lobby but before dawn they would have taken over the whole house from the owner.) (Sheba interprets Èèdè to mean veranda, which seems unlikely. In old-fashioned architectural houses, rooms were usually adjacent to each other, the space-in-between or the interstitial space will be equivalent to the living room of the modern architectural mansions. It is even logical to call it a passage that allows for different occupants of such house to move in and out. Veranda will actually mean iwájú ilé, that is, a roofed platform along the outside of a house, level with the ground floor. See https://www.google.com/search?client=firefox-b-d&q=veranda+meaning),

2) Ká sòrò, ká má ba béè ló bará Òyó jé. [Speaking the contrary is the embarrassing habit of Òyó people].

3) Òyó dòbálè, inú rè lósòó. [The Òyó man prostrates while the inside squats].

As Sheba notes, the three proverbs depict Òyó Yorùbá people as extortionists and this attitude aided their expansion within the Yorùbá land. They also appear to be cunning and deceptive in their behaviour. The three proverbs share the same meaning, a perceived duplicitousness of Oyo people. However, Sheba's depiction of Oyo people as extortionist and expansionist on account of these proverbs may be challenged. First, expansionism is not necessarily a logical outcome of an extortionist predisposition.

Many expansionists are not accused of being extortionists, expansionism through war and conquest being the commonest example. On the other hand, being extortionist by nature or disposition doesn't make anyone human group an expansionist. Furthermore, with respect to the second proverb, there is reason to believe that all human beings are potentially if not inherently cunning and deceptive. Recall here Thomas Hobbes' [30] depiction of life in the state of nature; that is, a state of human interaction absents of any political authority. Therefore, it is not a trait unique to any one group. As a matter of fact, all the three proverbs could also be prospectively used to stereotype any of the Yorùbá dialectal groups depending on the contexts in which they are used. Life experience has shown that many Ìjèbú, Ìjèsà, Èkìtì and Ondó people could be as cunning and deceptive as the Òyó people are claimed to be.

## 7. Joking religiously

Yorùbá people enjoy jokes and stereotypes about religious groups with a sense of impunity. Here are a few examples of jokes about Muslims:

1) Lèmómù tí ó so wípé Ìyàn yóò mú, omo rè kò ní je wàláà. [The Imam who says that there will be famine, his son or daughter will not eat Arabic slate]. This is used when the people are being threatened by the preaching of the Imam who is predicting woes and calamities including predicting famine. After all, famine doesn't spare anyone, including the Imam's family. Everyone will be impacted. Note, however, while this proverb uses the Muslim Imam's harsh prediction as an instrument, what it really does is to highlight a fact of life. No one is immune from a generalized calamity even if any one person anticipates it or warns of its coming. This proverb is similar to another: *Òrun n ya bò, kìí se erù enìkan*.—[The observation that the falling of the sky is imminent should not be construed as the burden of any single person].

2) Lèmómù j'óná O nbèèrè irùgbòn, kí ni ó kó ma j'óná? [The Imam was burnt and you are asking for his beard, what would have burned first?] This proverb is used when a calamity strikes and some people are concerned about trivial issues. Of course, it is an awkward imagination to think that a man who was burnt would have his beard still left intact. Again, while the proverbs uses a feature such as growing long beards which is somehow unique to Muslims in Yoruba land, it makes a more general point about life and lived experiences.

3) Ebi kò pa ìmàle (mùsùlùmí), ó ní òhun kìí je ààyá, ebi pa Súlè ó je òbo. [A Muslim is not hungry, he claims that monkey meat is his taboo, but when Suleiman (a Muslim) was stricken by hunger pang, he ate a gorilla meat]. Muslims neither eat monkey nor gorilla. This is another proverb that uses a Muslim's belief to highlight a general moral problem of hypocrisy.

Jokes about Christians include:

1) Réfénì n sanra, sùgbón omo ìjo nrù. [The Reverend gets fatter while the members of his congregation are getting lean]. In pre-modern Yorùbá society, the priests were well catered for. The first fruits of the farm products belonged to the priests. Nay, in the era of Pentecostal Christianity, priests and ministers of God in many of these Pentecostal churches get bountiful gifts from members. As a matter of fact, many Pentecostal pastors collect certain offerings from their members, which is novel to Christianity itself called "Prophetic Seeds".

2) Ìyàwó Réfénì tí ó n kiri búrédì ní ojó Sunday, yóó so oko rè l'énu ni. [The wife of a Reverend who advertises the sale of bread on Sunday mornings is an embarrassment to her husband]. A Reverend's wife is not expected to sell bread when Sunday service is going on).

The first joking proverb is still in use because of the prevalent abuse of some Christian priests demanding different kinds of gifts of money, foods and other material goods from their members. While many of these members are themselves lacking the good things of life, they see their priests living larger than life. In many Pentecostal churches, members may be in deep suffering while their pastors live in opulence and boastful display of wealth. On the other hand, while it appears funny, the second proverb is a depiction of the dilemma faced by many pastors and their families in African indigenous churches where they lack support and must make ends meet. The wife has no choice other than to engage in quick early Sunday morning sales of bread to raise money for both church offering and house keep.

## 8. Joking at workplace

Joking relationship takes place at kiosks, motor parks, restaurants, market places and various shops where different kinds of trades take place. Few examples show this very clearly.

Worldwide, public passenger vehicles ply different inter- or intra-city routes. In Nigeria, public passenger vehicles, especially buses, have drivers and conductors, a practice not common in developed countries. The function of bus conductors is to invite or canvass for passengers to patronize their buses. One day, a coaster passenger bus drove passengers from Lagos to Ìbàdàn and stopped at the designated bus stop at Iwo Road in Ìbàdàn, where passengers converge to board passenger vehicles. The driver of the coaster bus needed passengers for his return trip to Lagos and so, his bus conductor called out, soliciting for passengers traveling to Lagos.

Meanwhile, one of the intra-city Ìbàdàn buses' conductors was also soliciting for passengers to board his bus for the inner city routes which he plies, shouting out the stops on his route. It goes like this:

The Ibadan conductor shouting his bus route: Ìdí Arere (Arere is one of the big trees and a community where the tree is located was named after the tree), Ìdí Osè (Ose is another big tree and a community named after it is a bus stop), Ìdí Ayùnré (Ayunre is another big tree and a community named after the tree is a bus stop) and so on.

Now, Ìdí could mean "at the spot" of Arere, Osè, and Ayùnré. It could also mean the lower position of a thing such as the bottom of a pot. But Idi also has an anatomical meaning referencing the butt of human and non-human animals.

On his part, the Lagos bus conductor found a good outlet for dispelling stress and creating fun out of an ordinary situation. He turned Idi from the bus stop context which the Ibadan bus conductor had assigned it, to Ìdí as human backside or butt. Out of the blues, he shouted, "we also have Ìdí Àràbà in Lagos," touching his buttock. Note that Àràbà is a much bigger tree than the ones already mentioned above. Thus, the Lagos bus conductor was trying to prove to the Ibadan bus conductor that much bigger buttocks were in Lagos than in Ìbàdàn, Therefore, the Ìbàdàn bus conductor should not think it was only in Ìbàdàn that people could see Ìdí (buttocks). The joke was not lost on passengers around who complimented him with a big applause, all relieving their stress as they waited for their various trips.

## 9. Play and humor in traditional Yorùbá marriage as joking relationship

Joking relationships in form of ritual of license during marriage rites among indigenous or ancient Yorùbá used to be a common feature of traditional wedding rituals (it still happens in some places with moderations). In such rituals, brides, especially, were the objects of jokes, teases, jests, humors and laughter. In this traditional Yorùbá setting, friends of the bride would have rehearsed different kind of jokes and humorous songs to use when a new bride was to be escorted to her intended husband's house and either sex or a collection of men and women engage in formal joking activities during the ceremony.

When a new bride is ready for her husband's house on their wedding night; the friends and the younger sisters and cousins of the new bride are by custom expected to escort the newly wedded woman to her husband's family house. As soon as they get close to the husband's family house, they start with different kinds of songs with implicit and explicit sexual coloration. Here are some examples:

- K'òlókó ní'lè yí ni, t'ó òbò nse bí àlúkú àlàpà? [Does it mean that there are no men with penises in this place? In a sea of vaginas that are running around?] This song goes with great hilarity and loud clapping) [31].
- Alábàké ti inú ijù tí óti lo kó igi fún iná dídá w'álé, jé kí òbòo rè fè sílè fún ìbálòpò. [Alábàké has just returned from the forest, fetching firewood for cooking. Let her vagina be wide open for sexual intercourse].
- Olókó s'òbò l'álejò. [Men with penises come and give hospitality to women with vaginas].

The above are examples of bridal songs also known as Ekún Ìyàwó, typical in traditional wedding ceremonies. They are funny and almost always with sexual language. While we may today find them offensive or demeaning, traditionally they are believed to serve some useful purposes especially for the new bride. We may identify three such purposes. First, the newly wedded woman is young and inexperienced. She does not know what she is going to face in her new home far away from her family. Such a lack of understanding creates anxiety. A recent case reported from Northern Nigeria brings this out clearly. An 18-year old woman stabbed her new husband to death because he approached her for sex. Her excuse was that she did not know that sex was part of marriage and she feared that the man—her husband—was trying to hurt her when she was approached for sex. These songs introduce the newly wed to her new life and lighten her up while it tempers her fear which she laughs off in the company of her friends.

Second, the songs are integral parts of the traditional Yorùbá marriage rites of passage in which sex and sexuality are joked about and are freely discussed. As Olupona and Ajibade [31] observe, "those songs are rendered to provoke laughter in the midst of the tears that accompany the maiden's performance". And according to Evans-Pritchard [32], "It is not uncommon for those who live amongst primitive peoples to come across `obscenity' in speech and action. This `obscenity' is often not an expression by an individual uttered under great stress and condemned as bad taste, but is an expression by a group of persons and is permitted and even prescribed by society".

Third, as mentioned above, the songs are means of preparing both husband and wife for sexual intercourse which is expected to consummate the night of wedding. Traditionally, men and women betrothed to each other are not expected to be sexually intimate before their wedding. The songs are meant to get them in the mood for sexual activity or get them initiated into sexual activity on their wedding night.

## 10. Comedy: Socially acceptable form of public joking relationship

Comedy is as old as the dawn of human consciousness and it is practiced in virtually all known cultures of the world. Due to its social relevance and its continued use as a source of amusement among the Yorùbá and its close connection to jokes and joking relationship, a brief treatment of it is necessary in this paper. Comedy involves a comedian who is skillful in entertaining people. He or she seeks to "entertain an audience through jokes (emphasis mine) or amusing situations, or acting foolish (as in slapstick) or employing prop comedy [33]. It is explained further as "a literary genre and a type of dramatic work that is amusing and satirical in its tone, mostly having a cheerful ending. The motif of this dramatic work is triumph over unpleasant circumstance by creating comic effects, resulting in a happy or successful conclusion".

A comedian who addresses an audience directly is called a stand-up comedian [32]. Comedy is performed in every place and within dramatic or theatric plays. In recent times in Nigeria, many standup comedians have been discovered, who perform once or twice a week for audiences who pay entrance fees in Lagos, Abuja, Ibadan and other major cities. Popular standup comedians include the late Gbenga Adeboye, AY, Basketmouth, Kenny Black (whose original name is Òtòlórìn Kehinde Peter), Alibaba Akpobome, I Go Die, Helen Paul, Chioma Omeruah, Maraji and a host of others. Interestingly, sex gender does not have any major influence on the Nigerian comedy as both female and male Nollywood actors and actresses dominate the comedy scene. The Yorùbá have an appropriate appellation for them: A d'èrín pa Òsónú [Skillful in getting sadists to laugh].

It has been observed that "comedy tends to bring humor and induce laughter in plays, films, and theaters." The primary function of comedy is to amuse and entertain the audience, while it also portrays social institutions and persons as corrupt, and ridicules them through satirizing, parodying, and poking fun at their vices. True to this description, Nigerian comedians are skillful in mimicking high profile people, including politicians, such as president, governors, ministers, senators and representatives. They have jokes about kings and religious leaders as well. What is more, many of these comedians even use the occasion of their casting jokes to reveal some vices of the leaders as those leaders are seated in the audience and participate in the laughter as if they were not being affected by the jokes. Such a practice has been noticed in American culture since 1960s as well; where black comedians have consistently practiced social satire to poke fun at the expense of whites [5]. We may raise the question: "why has there not been any serious litigation against those comedians?" The answer lies is the fact that everyone knows that these are matters for fun and no seriousness is attached to whatever comes out of the mouth of a comedian in action. Indeed, these comedians always also make fun and cast jokes about their own persons, origin and cultural backgrounds in such a derogatory manner that it becomes difficult for anybody to raise an eyebrow against their being made objects of jokes, humors, jests and laughter.

Òtòlórìn Kéhìndé Peter, alias Kenny Blaq, for example, casts jokes about his background, his name and his town in all his comedies both in Nigeria and overseas. In most of his comedies, he is fond of poking fun at the presidents of Nigeria, past and present. The current president Muhammed Buhari is not an exception. Kenny Blaq told his listening audience how President Buhari invited him through a phone call to serve as the Master of Ceremony (MC) for his daughter's wedding (One can easily watch any of his comedies on YouTube). The joke goes like this:

- President Buhari called on phone: Hello is that Kenny Blaq?
- Kenny Blaq replied on phone: Yes, Your Excellency!
- President Buhari: You are shouting!
- Kenny Blaq: I am sorry sir, Your Excellency
- President Buhari: How much do you charge for your service?
- Kenny Blaq: What kind of service, dear Excellency?
- President Buhari: For wedding
- Kenny Blaq: I charge thirty billion (he said this because it was the President of Nigeria)
- President Buhari: What, how much is the whole country (Nigeria) worth? Do not worry, we will use Dino Melaye (Dino Melaye was a Senator of the Federal Republic of Nigeria, a virulent critic of the President and is also well known as a humorist and joker in the Senate chamber).

## 11. Jokes and humor on the church's pulpit

Few Yorùbá pastors joke and create humors before their congregations with the aim of driving home their sermons or making them to be alert. For example, an invited pastor who sensed that the members of the congregation needed to be alert to follow his sermon cast a joke. He told the members of the congregation how he was stopped by a team of police officers when he was coming from a church vigil at 3.00 a.m. in Lagos. The dialogue between the pastor and the Nigerian police officer goes like this:

- Police officer: Mr. Man, where are you coming from at this time of the day?
- Pastor: From our church vigil?
- Police officer: Okay, where are your particulars (the policemen meant vehicle's papers)?
- Pastor: Reached into the safe of the car; Here are they sir?
- Police officer: After searching closely for a while, they discovered that the papers were up-to-date. But they went further to ask the Pastor: why are you driving alone at this hour of the day?
- Pastor: I am not alone; riding with me in this car are: God the Father, God the Son and God the Holy Spirit, and the innumerable company of angels.
- Police officer: (Became annoyed and shouted): You have violated the driving rule; you carry overload!!!

With careful attention, one could see the creative ingenuity of the pastor. Normally, no Nigerian police officer would charge a driver for carrying overload cargo just because the driver announced that he was accompanied by celestial beings that included God, Jesus, Holy Spirit and the angels. The pastor skillfully moved from the joke, which he turned into prayer, telling the congregation that for their attendance in church that day, they would carry overload of blessings back to their various homes "in Jesus' name". The congregation got the joke as they shouted a loud "Amen" and began to laugh and clap. The pastor has succeeded in creating a listening audience or congregation for his message.

From the foregoing, it is clear that joking relationship pervades the social, political, religious, and family atmosphere of the Yorùbá, and there is no limit at which people could joke. The actors and actresses on Nollywood video films, African Magic and others joke freely, tease one another, poke fun at one another and create humor and laughter for the listening and watching audience.

## 12. Social and legal implications

The legal hazard of joking relationship in Nigeria remains unclear. At what point there is risk of litigation is up in the air especially because there has not been any attempt to sue a comedian based on his or her joking performance. What is clear is that the circle of social acceptable joke is quite broad and stand-up comedians have been casting jokes on anything and everything with no serious legal implication since the return of democratic rule in the country. We know, however, that jokes and comedy were no-go areas during military rule. As Ayakoroma the critic notes, "During military rule, you couldn't go and start cracking jokes about the head of state. That night, they would have come for you. So we can say that civilian rule opened the way for people to make jokes about our leaders without fear of being arrested.

We know, for instance, that as military Head of State between 1976 and 1979, General Olúsegún Obásanjó dealt severely with all his critics such as Fela Aníkúlápó Kútì by burning down his Kàlàkútà Republic which also led to the death of Fela's 77 years old mother" [33]. In the present democratic dispensation, however, comedians poke funs and crack jokes about political elites with impunity. Ironically, the same dictatorial Obásanjó later contributed to its (joking) public acceptance as the civilian head of state, to the extent that he (Mr. Obásanjó) championed the cause of comedians and recommended for performances such stars as Mr. Akporobomerere, who roasted him regularly [33].

Comedians have patriotic reasons to roast political leaders and activists. Thus, popular Nigerian comedian Mr. Okpocha, 37 commented, "I can stay away from religious jokes, but I'm not going to stay away from political jokes. It's something that affects the common man and nobody is speaking on their behalf. Inasmuch as I definitely have to limit myself so that I can live longer, I can't see a truth and not say it" [33]. Obádáre argues that "As part of 'emergent' civil society's mean of subverting, engaging and deconstructing the state, humor (or joking) can be important in exercising agency even as it is being denied, attaining a form of political participation amid alienation, and, crucially, challenging, contesting, negating, and 'playing with' official meaning".

This is not to deny that the challenges are still there. As it has been rightly observed, "working in such public spheres, the comedians are challenging deeply rooted social and political mores. Socially, Nigeria remains an extremely hierarchical country where powerful individuals are treated with fawning respect. For the second time since military rule ended in 1999, Nigeria finds itself governed by a former general, President Muhammadu Buhari, evidence of the military's lingering influence” [34].

## 13. Conclusion

In this paper, I have examined the concept and practice of joking relationships among the Yorùbá of southwestern Nigeria. I have attempted to show the relevance of Radcliffe-Brown’s theory to this practice among the people with a modification that moves beyond simple theoretical model to the discussion of its practice among the Yorùbá people. I have also shown the weakness of the earlier anthropologists especially with reference to kinship and marriage alliance theory proposed by Radcliffe-Brown et. al. My suggestion is that this theory can be further opened up for critical debate and analysis and can be pushed further especially because of its limitations in this era of globalization, westernization, and cross-cultural diffusion with regards to Islam and Christianity, which has led the indigenous people to abandon many of the norms and customs through which they maintain cohesiveness and unity.

Christian Fundamentalists and Muslims in Yorubaland, in particular, have made the matter worse, because of their teachings that sobriety and seriousness at all times is an indication of pietism, from which it follows that such religious groups might take offense at jokes, jest or humor that target their doctrines and practices. The Danish Cartoon crisis of 2005 and 2006 that spiked off religious violence is a good example of what extremist religious groups could determine as an offense against their belief system [35]. Not only that, the consanguinal relationships that used to exist between Muslims and Christians in traditional Yorùbá society has been compromised and weakened so much that there is an element of suspicion in interpersonal relationships. Worse still, is the complicated relationship that exists between Yorùbá people and other ethnic groups in contemporary Nigeria. It may now be very difficult for the Yorùbá to poke funs that stereotype Hausa-Fulani in the present volatile and polarized politico-religious atmosphere that Nigeria is.

Furthermore, as human beings move away from the hold of tradition and become more and more conscious of their self-esteem and self-worth, joking relationship might lose its value in the future. It is not now uncommon to see up-and-coming Yorùbá men and women take offense against joke and jest directed at them as an assault on their dignity. With individuals becoming sensitive to jokes and jests, we can be sure of the multiplier effect of such sensitivity in the political arena. Thus, comedy jokes and jests must be handled properly so they do not unwittingly incite violence against political or religious authority or other social institutions.

These caveats notwithstanding, however, we must underscore the fact that Yorùbá communities have been well-served by their cultural investment in joking relationship over the decades and centuries. It is the reason for the vivaciousness of Yorubaland. It is what people notice and why they remark that the Yorùbá are a happy people. One of the distinctive aspects of Yorùbá social life is their social parties popularly referred to as Owàmbè parties. These include naming ceremonies, wedding ceremonies, house warming ceremonies, birthday ceremonies, and funeral ceremonies, featuring elaborate food service, drumming and dancing. But one of the most enduring aspects of those ceremonies is the jokes and funs that fill the time that people spend together during which they completely forget about any of their problems. Depression and suicide are few and far among the Yorùbá partly because they organize their social life such that they place a high premium on joking relationship and humor.

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## References

1. Available online: https://www.laughnowamerica.com/jokes/i-have-great-news-for-you (accessed on 12 April 2024).
2. Labouret MH. Joking kinship in West Africa (French). Journal of the International African Institute. 1929; 2(3): 244-253.
3. Paulme D. Joking kinship and blood alliances in West Africa (French). Journal of the International African Institute. 1939; 12(4): 433-444.
4. Pedler FJ. Joking Relationship in East Africa. Journal of the International African Institute. 1940; 13(2): 170-173.
5. Radcliffe Brown AR. On Joking Relationships. Primitive Societies; 1940.
6. Goody J. Comparative Studies in Kinship. Stanford University Press; 1969.
7. Obadare E. The uses of Ridicule: Humour, 'Infrapolitics' and Civil Society in Nigeria. African Affairs. 2009; 108(431): 241-261.
8. Jones RA. You Eat Beans! Kin-Based Joking Relationships, Obligations, and Identity in Urban Mali. Available online: http://digitalcommons.macalester.edu/anth__honors/2 (accessed on 12 April 2024).
9. Apte ML. Humor and Laughter, An anthropological approach, Ithaca. Cornell University Press; 1985.
10. Practices and Expressions of Joking Relationship in Niger. Available online: https://ich.unesco.org/en/RL/practices-and-expressions-of-joking-relationships-in-niger-01009 (accessed on 12 April 2024).
11. Gundelach P. Joking Relationships and National Identity in Scandinavia. Acta Sociologica. 2000; 43(2): 113-122.
12. Ògunbà O. Ceremonies. In: Biobaku SO (editor). Sources of the Yorùbá History. Clarendon Press; 1973.
13. Available online: https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html (accessed on 12 April 2024).
14. Bascom W. The Yoruba of Southwestern Nigeria. Holt, Rinehart and Winston; 1969.
15. Salamone FA. Ethnic Identity and Religion. In: Olupona JK, Fálolá T (editors). Religion and Society in Nigeria: Historical and Sociological Perspectives Ibadan. Spectrum Books Ltd; 1991.
16. Mauss M. The Gift: The form and Reason for Exchange in Archaic Societies. W. W. Norton & Company; 1990.
17. Freud S. Jokes and their relation to the unconscious. The standard edition of the complete psychological works of Sigmund Freud. W. W. Norton & Company; 1905.
18. Lowie RH. Primitive Society. Liveright Publishing Corporation; 1947.
19. Sheba JO. Ethnic Stereotyping in Yorùbá Proverbs. International Journal of African and African-American Studies. 2005; 1(2).
20. Zenner WP. Ethnic Stereotyping in Arabic Proverbs. The Journal of American Folklore. 1970; 83(330): 417-429.
21. Akìwowo AA. Ajobi and Ajogbe: Variations on the Theme of Sociation. University of Ife Press; 1970.
22. Fadipe NA. Sociology of the Yorùbá. Ibadan University Press; 1970.
23. Olubomehin OO. Ethnic and Communal Clashes in Nigeria: The Case of the Sagamu 1999 Hausa-Yoruba Conflict. African Research Review. 2012; 6(3): 135-149.
24. Gatawa MM. Nter-Group relations in historical perspectives: A case study of Yoruba and Hausa communities of Agege, Lagos, Nigeria. African Journal of History and Culture. 2013; 5(9): 171-177.
25. Available online: https://www.vanguardngr.com/2021/01/fulani-herders-attack-two-as-tension-mounts-in-ibarapa/ (accessed on 12 April 2024).
26. Berger AA. Anatomy of Jokes. Journal of Communication. 1976; 26(3): 113-15. doi: 10.1111/j.1460-2466.1976.tb01913.x

27. Hall ET. The Silent Language. New York: Fawcett; 1968
28. Haralambos M, Holborn M. Steve Chapman and Stephen Moore. Sociology: Themes and Perspectives, 8th ed. HarperCollins; 2014.
29. Camosy CC. Intellectual Solidarity and Transcending Polarized Discourse. Political Theology. 2014; 15(1): 40–52.
30. Hobbes T. Hobbes's Leviathan. Clarendon Press; 1909.
31. Olupona JK, Ajibade S. Ekun Iyawo: Bridal Tears in Marriage Rites of Passage among the Oyo-Yorùbá of Nigeria in Holy Tears: Weeping in the Religious Imaginations. Princeton University Press; 2005.
32. Evans-Pritchard EE. The position of women in primitive societies and other essays in Social Anthropology. Faber and Faber; 1965.
33. Available online: https://literarydevices.net/comedy/ (accessed on 12 April 2024).
34. Onishi N. Nigeria's Comics Pull Punch Lines from Deeper Social Ills. Available online: https://www.nytimes.com/2015/12/06/world/africa/nigerias-comics-pull-punch-lines-from-deeper-social-ills.html (accessed on 12 April 2024).
35. McGraw P, Warner J. The Humor Code. Available online: https://www.huffpost.com/entry/muhammad-cartoons_b_1907545 (accessed on 12 April 2024).

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Article

# The individual and combined effectiveness of virtual reality and interval Nordic walking on the cardiorespiratory hemodynamic and central adiposity among internet addiction adolescents

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**Abstract:** Physical Inactivity caused by internet addiction (IA) in adolescents is one of the world's most serious health issues and technology-based intervention and exercise training methods are being developed to control it. This study sought to examine the potential influences of 2- and 4-week-virtual-reality (VR) training program with/without interval Nordic walking (INW) on hemodynamical-cardiorespiratory and central adiposity indices among internet-addicted adolescents. A randomized controlled trial design was conducted among 150 individuals randomly assigned to VR, INW, VR + INW, and control groups regarding sexes. In every specific group, participants performed one of three exercise protocols (i.e., VR, INW, and VR + INW) of three 60-minute sessions/week for 2 and/or 4 weeks, except for control group. The measurements were conducted at different phases (i.e., the baseline, 2- and 4-week-protocol interventions). Following VR and INW training protocols, a significant increase and decrease were detected in VO2max and MVO2 respectively, especially among girls ($p$ < 0.001). BAI values showed significant improvements ($p$ < 0.01), especially in the VR-boy group following 4 weeks of intervention ($p$ < 0.001). The VR with INW training protocols has potential benefits for health status and could be considered an important non-pharmacologic strategy to prevent sedentary and maintain wellness in adolescents

**Keywords:** interval exercise; virtual reality technology; cardiorespiratory fitness; abdominal obesity; Nordic walking

## 1. Introduction

Undoubtedly, the rate of applying the internet through smartphones, tablets, laptops, and other digital devices has been widely developing due to doing some activities such as gaming, purchasing products, searching and sharing scientific information, etc. People are actively using social media apps including WhatsApp, Facebook Messenger, WeChat, QQ, Telegram, and Snapchat to communicate [1]. Despite the convenience of swiftly accessing extensive information, critical concerns about internet addiction (IA) complications have been raised among students which include distance from family members and friends, mental-physical health disorders, and academic performance drop [2]. Additionally, a negative correlation has been found between IA and self-esteem. Regarding ages and genders, it is particularly considered that children and adolescents are the vulnerable groups being affected by problematic issues of IA. This susceptibility is because of a psychological-developing process among children and adolescents that makes them emotionally unstable and less self-regulating, which leads to being easily influenced by virtual reality and increasing the prevalence of addiction habits [3–5].

Evidence illustrates that IA is associated with overweight and obesity [6–8], and health-related problems such as the risks of cardiovascular [9], nervous [10], and musculoskeletal [11–13] systems. For instance, Tsitsika et al. (2016) expressed that internet overuse is associated with overweight/obesity (12.4%) and dysfunctional internet behavior (14.1%), especially in boys [7]. Other researchers also reported similar results [11–13]. On the contrary, it is reported that there is no association between gender and IA [3]. Some treatment strategies have been recommended to modulate/control the harmful effects of IA, including psychological, medicine, and exercise treatments [14]. There are already psychotherapeutic methods and manuals (also published) for the treatment of Internet addiction (IA) [15,16], including cognitive behavioral therapy [17,18], motivational interviewing [19,20], emotion regulation [21,22]; which may take a long time based on previous study [14]. Whereas, it also has been reported that medical therapy may have side effects, which would influence a person's mental and physical health (especially among children and adolescents) [14]. On the other hand, treatments regarding physical training would be more practical and logical [14], and their physio-psychological advantages are confirmed [10,23]. Koçak (2019) stated that performing physical activity could significantly reduce the duration of being online (the severity of internet addiction) which generally leads to a decrease in the harmful internet overuse impacts [23]. Despite this, children and teenagers do not have a great desire to do long-term physical activities due to these ages' specific behavioral characteristics, therefore, designing and providing a special training program for them is vital.

Every individual can perform Nordic walking (NW) at various physical-fitness levels without any age limitations due to its easy learning and low vulnerability, which results in adopting a healthy lifestyle, preventing diseases, and improving physical fitness impacts [24]. Compared to regular walking, the entire body (about 90% of all muscles) is included during NW and the burnt calories can be elevated depending on the speed [25,26]. For instance, it is stated that performing two 60-minute NW training sessions per week for 3 months can improve body composition and maintain good health conditions, especially in the women population [27]. It has been confirmed the positive impacts of NW on improving body composition and the performance of upper and lower limbs [28]. Evidence also declared that NW is advantageous for quality of life (QoL) and cardio-respiratory indices such as blood pressure (BP), resting heart rate (RHR), myocardial oxygen consumption (MvO2), and maximal oxygen consumption (VO2max) [9,29]. Compared to regular walking, it is illustrated that NW beneficially impacts cardiovascular-cognitive physiological indices and traditional body composition parameters including body mass index (BMI), waist-to-hip ratio (WHR), and/or body fat percentage among middle-aged [27] and particularly elderly people [25,30], while its effects on new body composition indices such as abdominal volume index (AVI), body adiposity index (BAI), cone index (CI), body shape index (ABSI) and waist-to-height ratio (WHtR) are still not crystal clear. Plus, it should be highlighted that these new indices represent central obesity status and metabolic-syndrome-related problems [31]. Based on our knowledge, assessing the effects of NW on mentioned indicators is a novel aspect. Additionally, evaluating the influences of such exercise protocol on health-related indices among internet-addicted children and adolescents has been overlooked.

On the other hand, over the last few years, training while wearing virtual reality (VR) glasses has made a new approach to improving health through performing physical activities [32]. Recent technological advances have also made VR more ubiquitous, flexible, portable, and affordable [32]. Despite requiring a lot of physical and mental effort, the capability of distracting players from physical activity by making time flow and motivating them to continue the game process engaging is another main reason for VR technology's success, especially among children and adolescents [32]. Previous studies declared that VR might boost the potential long-term participation in physical activities and create a positive mindset about exercise [33]. To illustrate, Park and Lee (2023) expressed the positive impacts of VR Pilates training including increasing the duration of body-posture maintenance and a significantly higher coordination of the body (i.e., upper and lower limbs), among eighteen 24-year-old youths [33]. Evidence reported that the VR training program is appropriate for improving body composition, endurance, and strength performances while elevating exercise satisfaction and enjoyment regarding individual differences and levels [34]. Similarly, it has been observed that sympathetic activity (i.e., diastolic blood pressure and heart rate) boosted during and after speed-strength physical exercise among IA adolescents in comparison with non-internet-addicted individuals [9]. Since VR software is becoming more accessible, affordable, and highly attractive among teenagers, it seems this technology has great potential to be applied for health purposes among adolescent populations [35].

Altogether, according to the relationship between internet addiction and sedentary [36], the association among sedentary, obesity, health-problem [9,37], and quality of life [38] among teenagers, and also the sedentary stemmed from cultural and indoor-sport facility issues for girls in Iran, it is hypothesized that a combined VR-INW training protocol will result in a greater synergic influences central obesity indices and hemodynamical cardio-respiratory parameters among IA-adolescent, especially the girls. Therefore, the purpose of the present study was to evaluate the impacts of VR training programs with/without INW on visceral obesity parameters (i.e., WHtR, AVI, BAI, CI, and ABSI) and hemodynamical cardio-respiratory indices (i.e., heart rate (HR), BP, MvO2, heart rate recovery (HRR), oxygen pulse (O2puls), blood oxygen saturation (SpO2), and VO2max) among internet-addicted-teenage boys and girls along a four-week timeline.

## 2. Methods

### 2.1. Research design and ethical approval

In this investigation, the semi-experimental protocol was conducted in the form of one pre-test session and two post-test sessions (i.e., 2- and 4-week interventions) among adolescent boys and girls.

All methods and data collection were reviewed and approved by the local institutional ethics committee (Ethical code: IR.UMZ.REC.1401.008), which were performed according to the latest edition of the Helsinki guidelines [39]. Accordingly, all individuals had the opportunity to participate, obtain informed consent, and were familiarized with the testing procedures, protocols, and equipment. Additionally, the participants could ask about any part of the research progress whenever it was not clear. It should be noted that they also had the right to either withdraw or leave the experiment at any stage of the research process without any consequences.

## 2.2. Inclusion, and exclusion criteria and classification of participants

In this study, 150 healthy qualified-volunteered-teenage boys and girls participated (age range 12 to 18 years old). Participants were recruited via various ways and channels in virtual space, city communities, schools, and academic institutes.

In current study, to prevent possible impacts of disturbing interventions, some existing requirements were also noticed due to be eligible for participating in the research process, including neither history of smoking nor exposure to any second-hand smoke (hookah and cigarette); no drugs, medicine, and alcohol consumption; no neurological disorders; no psychoactive drug consumption; no history of chronic physical and mental diseases, or any other medical contraindications such as physical disability and limited mobility; having sedentary lifestyles (lack of regular exercise activities; less than 2 sessions per week); and being an internet-addicted (IA). It should also be mentioned that the girls were in the follicular phase during the present study. To be eligible as an IA, IA status was screened in two phases. In the first phase, individuals were questioned about having two main habits for at least two years to be considered to be internet addicted [40]; including 1. the least time spending of surfing the internet and using social media (Telegram, Instagram, WhatsApp, Viber, Facebook, Twitter, LinkedIn, YouTube, Imo Messenger, Line, WeChat, Snapchat, Tango, Soroush, Rubica, Shad) by smartphones and computers were settled at five hours a day and/or more than 38 h per week; and 2. Having a late-sleep schedule (going to sleep after midnight) [41]. In the second phase, they took Young's Internet Addiction Test, thus, they had to obtain a minimal sufficient score to participate in this study.

On the other hand, any reasons making a participant remain sedentary and/or avoid taking tests during the research period caused the person to leave the whole process. Additionally, if a person performed the exercise sessions less than 75% of the expected amount based on the formula (Equation (1)), he/she was removed from the program and exited from the research. Plus, it should be noted that we also scheduled a non-internet-addicted group and since no difference was observed in the data gathered from the young questionnaire [42] between IA and non-internet-addicted groups, this group was prohibited from participating in the study.

$$expected\ performed\ exercise\ sessions = \frac{expected\ number\ of\ exercise\ sessions}{total\ exercise\ sessions} \times 100 \tag{1}$$

The eligible people were randomly divided into main training protocol groups including 1. Interval Nordic walking (INW); 2. Virtual reality (VR); 3. Combined INW and VR (INW + VR); and 4. Control; and gender subgroups (i.e., boys vs. girls). In INW groups, participants performed the selected training protocols 3 days/week for two and four weeks. Individuals performed the selected virtual reality training protocols in VR groups, while the INW + VR groups did a combination of the INW and VR training protocols 3 days/week for two and four weeks. Meanwhile, the control groups were not exposed to any of these training interventions. Therefore, the above groups were organized as 1) INW-BOY; 2) INW-GIRL; 3) VR-BOY; 4) VR-GIRL; 5) INW + VR-BOY; 6) INW + VR-GIRL; 7) Control-BOY; and 8) Control-GIRL. The participants' anthropometric and demographic characteristics are summarized in **Table 1**.

**Table 1.** Anthropometric and demographics characteristic (mean ± standard deviation) of participants in different groups.

| Groups | | Age (years) | Body Mass (kg) | BMI ($kg.m^{-2}$) | WHR | IAD (years) | DIU (hours) | STAN | WPA (day) |
|---|---|---|---|---|---|---|---|---|---|
| Boys | INW (*n* =14) | 15.2 ± 2.3 | 75 ± 16 | 26 ± 4.2 | 0.88 ± 0.03 | 3–4 | 5–6 | 1–2 h after midnight | Less than one |
| | VR (*n* =14) | 14.7 ± 2.9 | 71.8 ± 3.9 | 23.8 ± 3.7 | 0.87 ± 0.04 | 3–4 | 6–7 | 1–2 h after midnight | Less than one |
| | INW + VR (*n* = 13) | 14.3 ± 2.5 | 69 ± 9.4 | 23.3 ± 1.5 | 0.88 ± 0.04 | 3–4 | 6–7 | 1–2 h after midnight | Less than two |
| | Control (*n* = 7) | 15.3 ± 1.9 | 71.8 ± 9 | 24.6 ± 3.3 | 0.91 ± 0.03 | 3–4 | 6–7 | 1–2 h after midnight | Less than one |
| Total (*n* =51) | | | | | | | | | |
| Girls | INW (*n* = 14) | 14 ± 2.44 | 65.26 ± 2.21 | 28.24 ± 0.33 | 0.78 ± 0.04 | 3–4 | 5–6 | one hour after midnight | Less than one |
| | VR (*n* = 14) | 15 ± 1.5 | 64.56 ± 1.5 | 33.2 ± 1 | 0.75 ± 0.04 | 3–4 | 6–7 | 1–2 h after midnight | Less than one |
| | INW + VR (*n* = 14) | 14 ± 0.4 | 64.42 ± 0.93 | 28.33 ± 0 | 0.78 ± 0.06 | 3–4 | 6–7 | one hour after midnight | Less than one |
| | Control (*n* = 10) | 14 ± 2.82 | 64.34 ± 0.76 | 28.33 ± 0 | 0.77 ± 0.08 | 3–4 | 6–7 | 1–2 h after midnight | Less than one |
| Total (*n* = 52) | | | | | | | | | |

BMI, body mass index; WHR, waist-hip ratio; IAD, internet-addiction duration; DIU, daily internet usage; STAN, sleep time at night; WPA, weekly physical activity; INW, Interval Nordic walking training; VR, Virtual reality.

## 2.3. Interval Nordic walking (INW) exercise training protocol with a pedometer

In this study, the INW training protocol was designed based on assessing previous Nordic walking research [43,44] while we applied some modifications. To evaluate the practicability of the protocol, we conducted a preliminary study among several teenagers, and the distance of 3000 steps was considered as the baseline step range. Under the researcher's supervision, the subjects performed three sessions of interval Nordic walking in green spaces and/or at parks for four weeks. Briefly, the incremental overload principle was increased during the following weeks by altering the number of training sets, rest duration, and training periods. Also, the number of baseline step ranges (i.e., 3000 steps in the first session) elevated to 7000 steps in the last session (at the end of the fourth week), while the net duration was kept constant at 30 min.

Accordingly, during these consecutive weeks, the number of steps was increased daily in the first, second, third, and fourth weeks by 200, 300, 400, and 500 steps, respectively, to follow the overload principle for the 30-min INW protocol. It should be noted that the protocol contained five sets of six minutes and a three-minute rest between sets during the first and third weeks, while four sets of 7.5 min, a three-minute rest, and a 5-min rest between sets during the second and fourth weeks, respectively. Every training session started and ended with stretching exercises, called warm-up and cool-down parts, for five to ten min. To control the speed of training performance (walking) in the 30-min time range, we applied pedometer devices (Omron hj-152-e) to measure the number of steps taken by individuals, thus, they were asked to wear the pedometer at the waist area. In addition, the participant's heart rate was maintained in the range of 60% to 75% of the maximal heart rate during training sessions through the first to fourth week, respectively.

## 2.4. Virtual reality (VR) training protocol

Before commencing the study, the VR groups were taught the correct method of performing VR training protocol during a learning session. The all-in-one VR headset device (Oculus Quest 2) was applied for the VR protocols. Also, VR groups performed three 30-min sessions/week for four weeks. Plus, the VR training protocol was designed to assess previous research [45,46] while we applied some modifications. Every session consisted of a five-min warm-up and a 30-min training. The 30-min training part included three types of games, such as Beat Saber, Ohshape, and Creed: Rise to Glory, in which the time of playing each game was about ten minutes. After the time range of each game was completed by the participant, the researcher changed it to the next one. These exercise games were randomly selected for each person in different sessions and participants were allowed to perform required movements in various directions so that mostly all their muscles were involved during the games. Needless to say, the individuals' heart rate approximately reached 180 beats per minute (bpm) during training time. **Figure 1** shows the schematic image of the VR device and the selected games.

To play the Beat Saber game, individuals performed a rhythm-based average level, in which the participant applied virtual lightsabers (laser sabers) to cut through blocks (as upper body movement) or to escape large blocks by sideway and crouching gestures (as whole-body movement). During the game, the blocks were moving toward the player (participant) according to the background music rhythm. Meanwhile, the music speed was changeable and adjustable. As for the Ohshape game, it can be considered a suitable fitness game that would meet the required intensity of high-intensity-interval (HIIT) training. This game has various difficult levels that were selected based on the physical ability and conditions of the participants. On the other hand, the Creed: Rise to Glory is a boxing game. During this game, the individual was allowed to perform several training types in a virtual gym (e.g., punching a punching bag and ball) as well as choosing 'competition mode' which offered a competitive fight against a computer opponent.

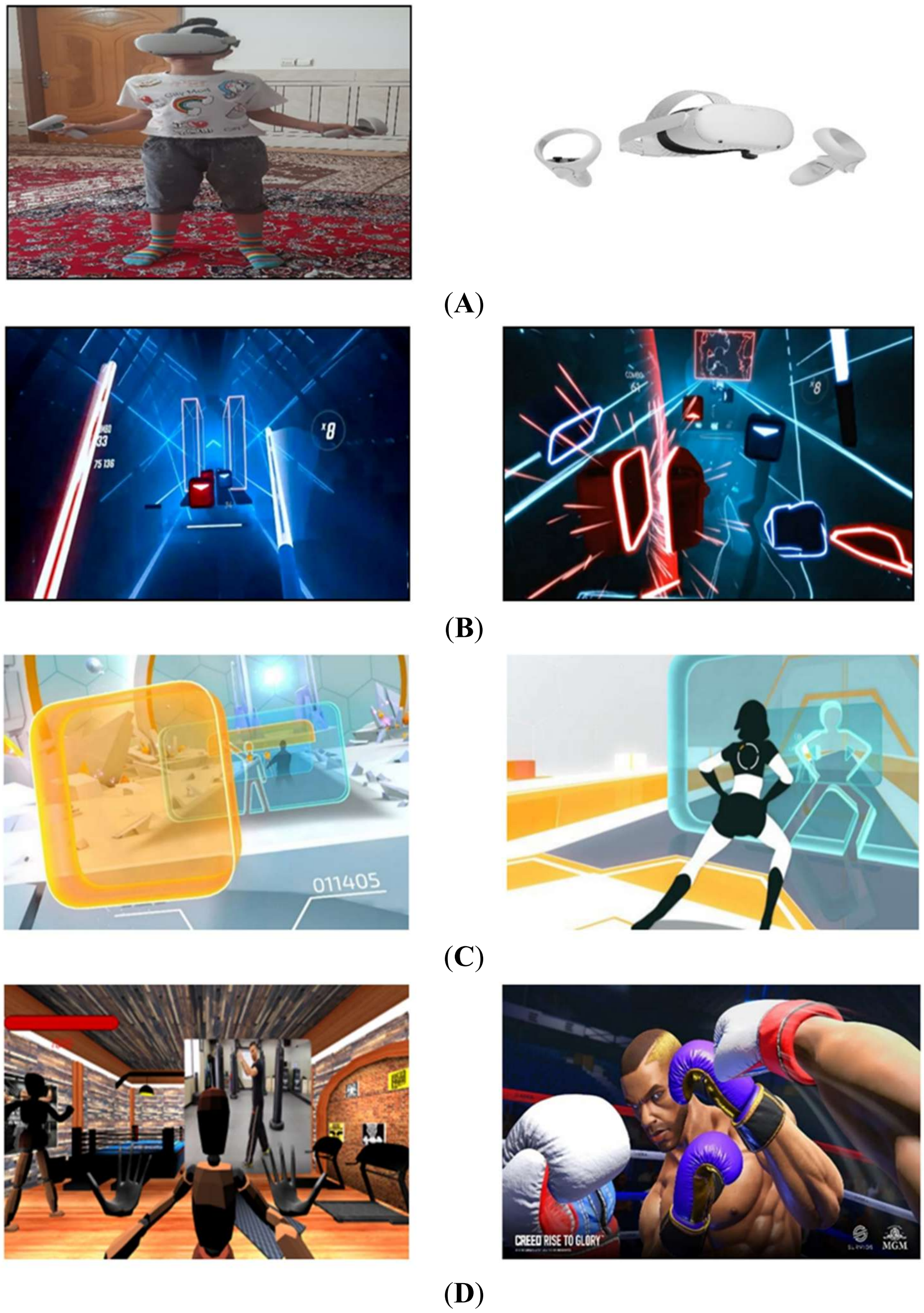


**Figure 1.** The schematic image of the VR device and the selected games. **(A)** Oculus Quest 2; **(B)** Beat Saber; **(C)** Ohshape; **(D)** Creed: Rise to Glory.

## 2.5. Data collection methods

To implement the training interventions and collect data, a preliminary study was conducted about the time and duration of the entire testing protocol for each person. Then, individuals were invited to attend at the reserved times to have better time management. All tests were applied and recorded in three phases, including the pre-test phase (baseline), the second-and fourth-week exercise-intervention implementation phases (as two post-test sessions).

### 2.5.1. Young's Internet Addiction Test (YIAT)

In this study, the YIAT test was used to evaluate the internet-addicted level of individuals [47]. This questionnaire is the first valid and reliable source to measure internet addiction, which contains 20 self-report items. Also, it classifies IA levels into three categories (i.e., Mild, Moderate, and Severe). Each item is scored by using a six-point Likert-type scale such as 1. Not Applicable ($_0$); 2. Rarely ($_1$); 3. Occasionally ($_2$); 4. Often ($_4$); 5. Always ($_5$). In this regard, scores between 31 and 49 illustrate the presence of a mild level of Internet addiction (mild IA), 50 to 79 indicate moderate Internet usage (moderate IA), and 80–100 show excessive Internet use (severe IA). This questionnaire has been standardized and its validity and reliability have been reported in previous studies with Cronbach's alpha of 0.9. The reliability of this scale has been confirmed by Cronbach's alpha coefficient of 0.88 in students [48].

### 2.5.2. Central obesity indices

As mentioned previously, all measurements were done in three phases (i.e., baseline, second-, and fourth-week phases) by an expert while the participants were standing barefoot and wearing minimal clothes. Their body weight (BW) was measured by a digital scale (ROYSA SCALE; having an accuracy of 0.5 kg) while their bladder was empty. Participants' height (H) was measured by a stadiometer with an accuracy of 0.1 cm. In addition, waist circumference (WC) was measured by placing a measuring tape (having an accuracy of 0.1 cm) on the horizontal surface between the lower rib and the umbilicus crown (the line above the navel), while hip circumference (HC) was evaluated as the greatest distance around the hips. Subsequently, the values of BMI, WHtR, and WHR were calculated using the following equation (Equations (2)–(4)) [49].

Abdominal Volume Index (AVI) predicts the fat distribution in the body's central region which is known as one of the best indices of central obesity evaluation [31]. On the other hand, other indices were calculated using the following equation (Equations (5)–(8)), including body adiposity index (BAI, called an independent-weight index) [31,50], cone index (CI, known as a model for evaluating obesity and body fat distribution) [31,49], and body shape index (ABSI, being useful to identify visceral obesity along overweight and obese people) (see Equations (5)–(8)) [49,51].

$$\mathrm{WHR} = \mathrm{WC\ (cm)} \div \mathrm{HC\ (cm)} \tag{2}$$

$$\mathrm{BMI(kg/m^2)} = \mathrm{BW\ (kg)} \div \mathrm{H^2\ (m^2)} \tag{3}$$

$$\mathrm{WHtR} = \mathrm{WC\ (cm)} \div \mathrm{H\ (cm)} \tag{4}$$

$$\mathrm{AVI} = \frac{2(\mathrm{WC})^2 + 0.7(\mathrm{WC}-\mathrm{HC})^2}{1000};\ \mathrm{WC\ (cm)};\ \mathrm{HC\ (cm)} \tag{5}$$

$$\mathrm{BAI} = \frac{\mathrm{HC\ (cm)}}{\mathrm{H}^{\frac{3}{2}}\ \mathrm{(cm)} - 18} \tag{6}$$

$$\text{CI index} = \frac{\text{WC (m)}}{0.109\sqrt{\frac{\text{BW (kg)}}{\text{H (m)}}}} \tag{7}$$

$$\text{ABSI} = \frac{\text{WC (m)}}{\text{BMI}^{\frac{2}{3}} \times \text{H}^{\frac{1}{2}}\ \text{(m)}} \tag{8}$$

### 2.5.3. Cardiorespiratory hemodynamic indices

The selected hemodynamic and cardiorespiratory indices were measured at three conditions; pre-exercise (rest), immediate after Queen's College Step Test (maximum), and at the third minute of post-exercise (recovery) status in three phases (i.e., baseline, second-, and fourth-week phases) while the participants were in the seated position. The blood pressures (i.e., systolic (SBP) and diastolic (DBP); mmHg), and the heart rate (HR) were assessed after 5 to 10 min of rest status in a seated position via an automatic pneumatic blood pressure machine having an appropriately sized cuff (Roosmax, Model ME701, Switzerland). Subsequently, the myocardial volume oxygen ($MvO_2$), known as the index of myocardial oxygen consumption, was calculated by multiplying SBP by HR. Continuous peripheral blood oxygen saturation (SpO2) was measured via a wearable finger pulse oximeter (Brisk, Model PO16, China). Therefore, individuals were asked to wear the pulse oximeter on the index finger of their non-dominant hands. The constructor has reported an accurate SpO2 measurement of about ± 2% [52].

To evaluate the cardiorespiratory fitness index (VO2max), we used the method of Queen's College step test (QCST) reported previously [53], which is illustrated in Equations (9) and (10).

$$\text{Girls}: \ \text{VO2 max}\ (\text{mL/kg}^1.\text{min}^1) = 65.81 - 0.1847(\mathit{Average\ Heart\ Rate}) \tag{9}$$

$$\text{Boys}: \ \text{VO2 max}\ (\text{mL/kg}^1.\text{min}^1) = 111.33 - 0.42(\mathit{Average\ Heart\ Rate}) \tag{10}$$

Afterward, the oxygen pulse values were calculated based on Wasserman et al.'s formula (Equation (11)) [54].

$$\text{O2 Pulse}\ (\text{mL/kg}^1.\text{min}^1.\text{bmp}^1) = \frac{\text{VO2max}}{\mathit{Maximal\ Hear\ Rate}} \tag{11}$$

## 2.6. Statistical analysis

All statistical analyses were performed with SPSS software (version 28.0 for Windows, IBM, Armonk, NY, USA) while GraphPad Prism®, version 10 (GraphPad Software, Inc., La Jolla, CA, USA) was used for creating figures. Initially, the Shapiro-Wilk test was used to measure the normality distribution of data. The parametric statistical test of variance analysis in repeated measurements was used to investigate the possible changes in the parameters at different phases (i.e., baseline, 2 and 4 weeks of training interventions). If significant changes were observed, the Bonferroni test was conducted to determine the between-group comparisons. Data are expressed as mean standard deviation. The significant value was set at $p < 0.05$.

## 3. Results

Although 150 participants registered in the current study, 103 individuals (51 boys, 52 girls) accomplished the protocols, completely. 47 persons were left aside stemming from some reasons, including; a) 26 individuals could not participate due to parental issues (i.e., their rejection, disallowance, and refusal); b) 11 persons participated in less than nine sessions of the training protocols (< 75% of total sessions); c) 10 individuals were not able to participate because of conflict scheduling and timing of this program with their other classes and plans. Therefore, the tests and their following analysis were applied to 103 subjects.

On the other hand, it should not be neglected that one specific expert collected the data, who was also responsible for checking the related calibration of applied devices.

### 3.1. Alternation of central obesity indices following various training protocol interventions

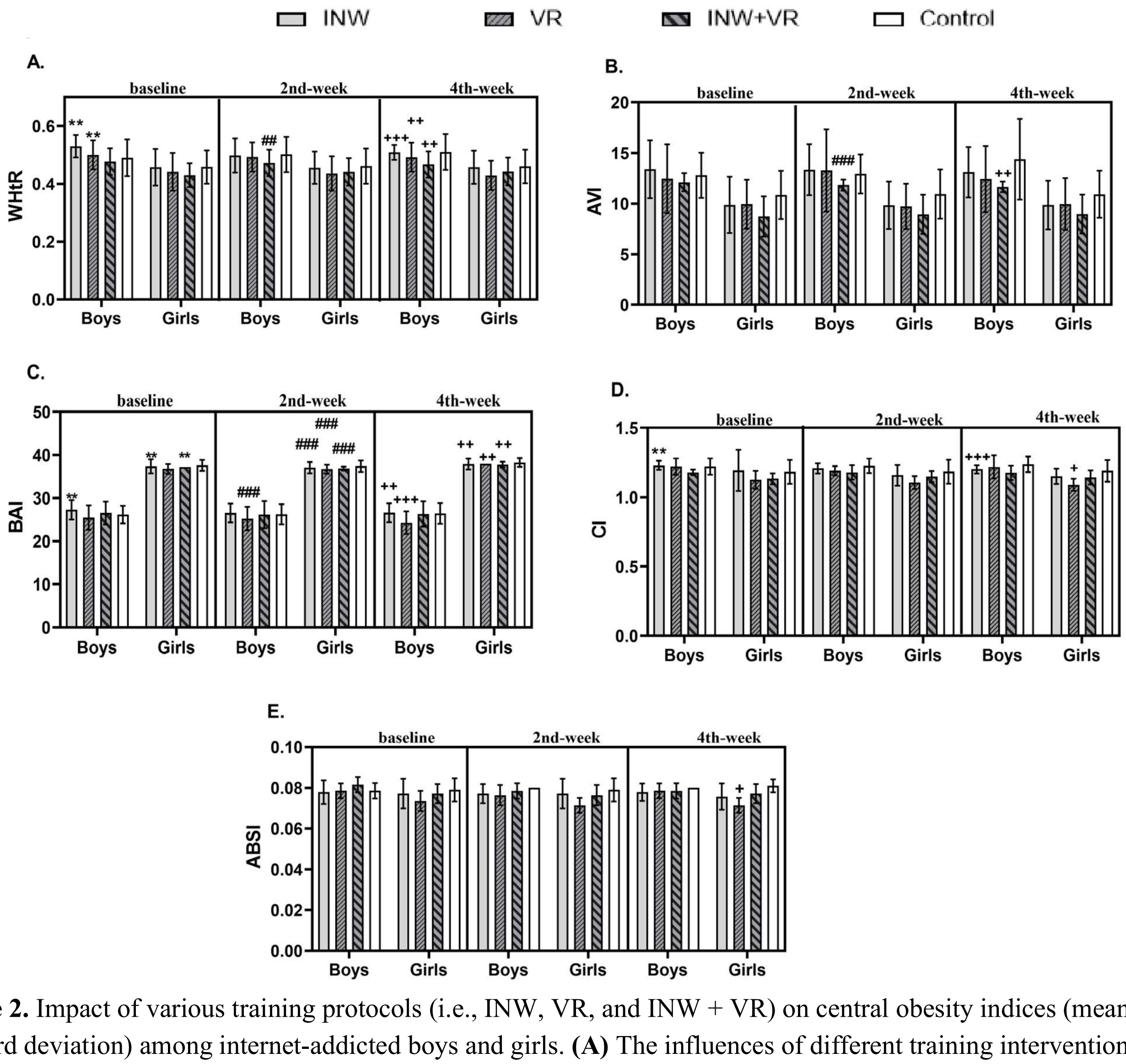


**Figure 2.** Impact of various training protocols (i.e., INW, VR, and INW + VR) on central obesity indices (mean ± standard deviation) among internet-addicted boys and girls. **(A)** The influences of different training interventions on WHtR values in IA boys and girls following the four weeks of training protocols; **(B)** The influences of different

training interventions on AVI values in IA boys and girls following the four weeks of training protocols; **(C)** The influences of different training interventions on BAI values in IA boys and girls following the four weeks of training protocols; **(D)** The influences of different training interventions on CI values in IA boys and girls following the four weeks of training protocols; **(E)** The influences of different training interventions on ABSI values in IA boys and girls following the four weeks of training protocols.

Abbreviations; INW, interval Nordic walking protocol; VR, virtual reality training protocol; INW + VR, combined INW and VR training protocols; WHtR, waist-to-height ratio; AVI, abdominal volume index; BAI, body adiposity index; CI, cone index; ABSI, body shape index.
* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, Differences between baseline and 2nd-week; + $P < 0.05$, ++ $P < 0.01$, +++ $P < 0.001$, Differences between baseline and 4th-week; # $P < 0.05$, ## $P < 0.01$, ### $P < 0.001$, Differences between the 2nd-week and 4th-week.

The WHtR values lessened significantly among boy groups that performed training protocols compared to their control group after two and four-week timelines (**Figure 2A**; $p < 0.01$, $p < 0.001$). As for AVI, the values did not change among all boy-exercise-protocol groups (**Figures 2B**; $p > 0.05$**).** Regarding the training protocols (i.e., INW, VR, and INW + VR), In addition, generally, BAI values showed a significant drop following performing either INW or VR training protocols for four weeks compared to two-week exercise protocols, especially in girls (**Figure 2C**, $p < 0.001$). Whereas, all boy-exercise-protocol groups did not have any significant differences in central obesity (i.e., CI and ABSI) during the training interventions (**Figure 2D**,**E**; $p > 0.05$).

### 3.2. Alternation of resting hemodynamic indexes following various training protocol interventions

Although the heart rate considerably decreased among all boy training groups (i.e., boy-INW, boy-VR, and boy-INW + VR), especially after four-week workouts (**Figure 3A**; $p < 0.001$). Whereas, only girls who performed INW showed significantly lower heart rate values at rest status (**Figure 3A**; $p < 0.001$). As for systolic blood pressure at rest condition, almost all girl- and boy-training protocol groups (i.e., INW, VR, and INW + VR) noted lower values right after four weeks (**Figure 3B**; $p < 0.01$). Contrarily, resting diastolic blood pressure significantly lessened among boys who performed either INW or VR training protocols following four-week workouts (**Figure 3C**; $p < 0.001$, $p < 0.01$). In addition, the resting $SpO_2$ values considerably increased among boys who performed both INW and INW + VR training protocols after four-week workouts (**Figure 3D**; $p < 0.001$, $p < 0.01$). As for $MvO_2$, only VR training groups (i.e., girl-VR and boy-VR) showed lower values after four-week workouts (**Figure 3E**; $p < 0.001$, $p < 0.01$).

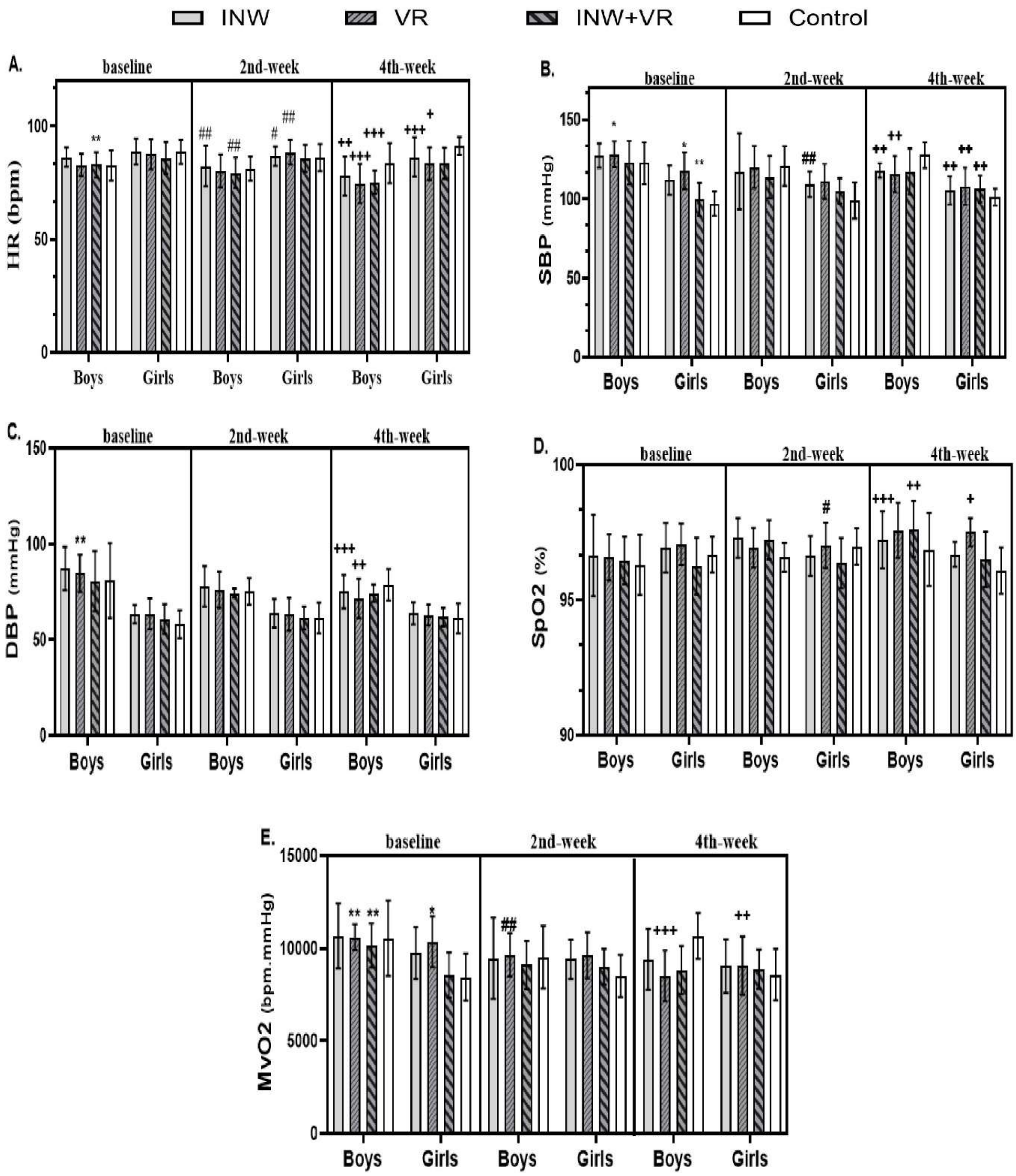


**Figure 3.** Impact of various training protocols (i.e., INW, VR, and INW + VR) on resting hemodynamic indexes (mean ± standard deviation) among internet-addicted girls and boys. **(A)** The influences of different training interventions on resting HR values in IA boys and girls following the four weeks of training protocols; **(B)** The influences of different training interventions on resting SBP values in IA boys and girls following the four weeks of training protocols; **(C)** The influences of different training interventions on resting DBP values in IA boys and girls following the four weeks of training protocols; **(D)** The influences of different training interventions on resting $SpO_2$ values in IA boys and girls following the four weeks of training protocols; **(E)** The influences of different training interventions on resting $MvO_2$ values in IA boys and girls following the four weeks of training protocols.

Abbreviations; INW, interval Nordic walking protocol; VR, virtual reality training protocol; INW + VR, combined INW and VR training protocols; HR, heart rate; SBP, systolic blood pressure; DBP, diastolic blood pressure; SpO2, blood oxygen saturation; MvO2, the myocardial volume oxygen.

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, Differences between baseline and 2nd-week; + $P < 0.05$, ++ $P < 0.01$, +++ $P < 0.001$, Differences between baseline and 4th-week; # $P < 0.05$, ## $P < 0.01$, ### $P < 0.001$, Differences between the 2nd-week and 4th-week.

### 3.3. Alternation of maximal hemodynamic indexes following various training protocol interventions

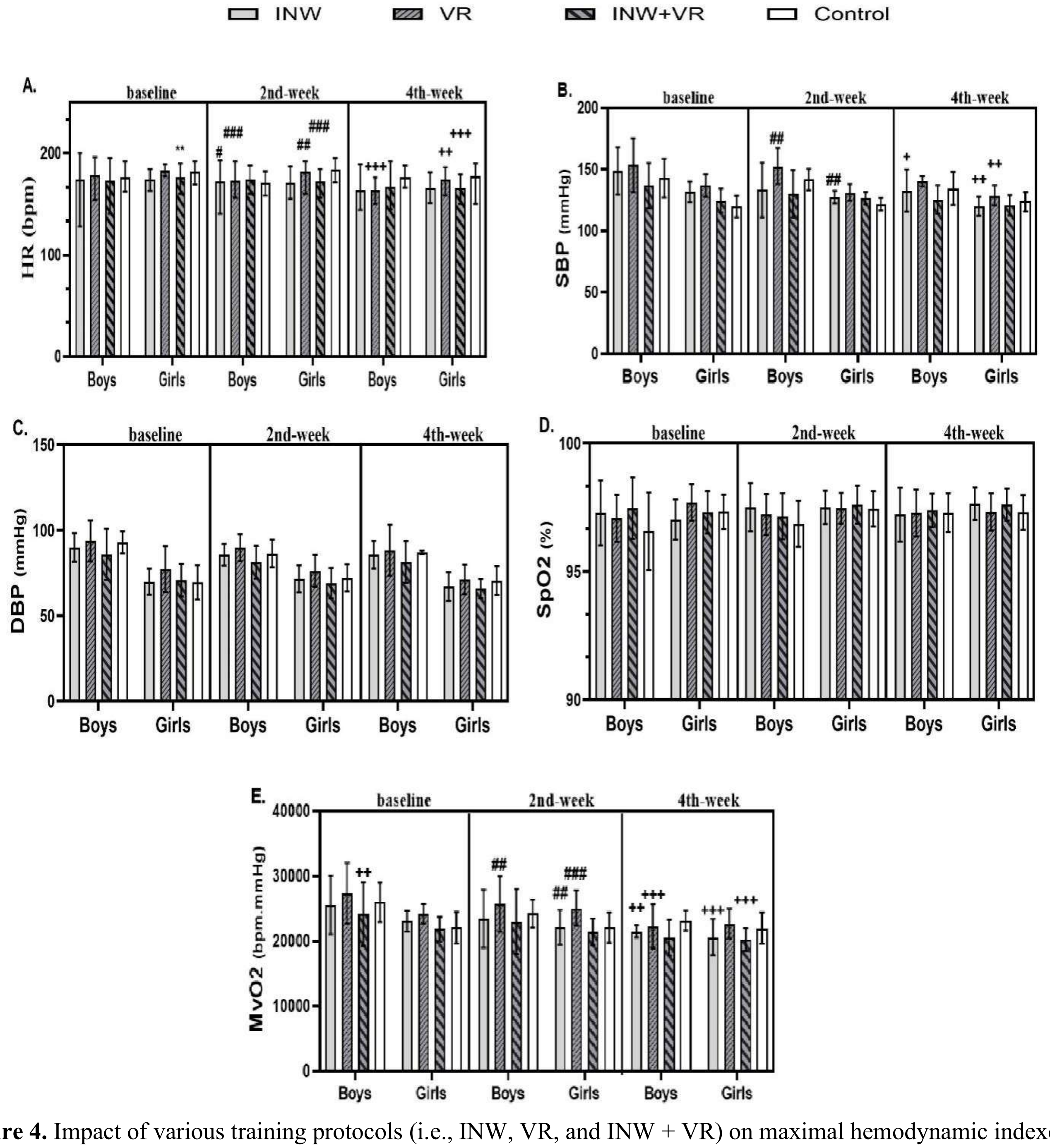


**Figure 4.** Impact of various training protocols (i.e., INW, VR, and INW + VR) on maximal hemodynamic indexes (mean ± standard deviation) among internet-addicted girls and boys. **(A)** The influences of different training interventions on maximal HR values in IA boys and girls following the four weeks of training protocols; **(B)** The influences of different training interventions on maximal SBP values in IA boys and girls following the four weeks of training protocols; **(C)** The influences of different training interventions on maximal DBP values in IA boys and girls following the four weeks of training protocols; **(D)** The influences of different training interventions on maximal $SpO_2$ values in IA boys and girls following the four weeks of training protocols; **(E)** The influences of different training interventions on maximal $MvO_2$ values in IA boys and girls following the four weeks of training protocols.

Abbreviations; INW, interval Nordic walking protocol; VR, virtual reality training protocol; INW + VR, combined INW and VR training protocols; HR, heart rate; SBP, systolic blood pressure; DBP, diastolic blood pressure; SpO2, blood oxygen saturation; MvO2, the myocardial volume oxygen.
* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, Differences between baseline and 2nd-week; + $P < 0.05$, ++ $P < 0.01$, +++ $P < 0.001$, Differences between baseline and 4th-week; # $P < 0.05$, ## $P < 0.01$, ### $P < 0.001$, Differences between the 2nd-week and 4th-week.

The maximal heart rate considerably decreased only in the boy-VR group after four weeks (**Figure 4A**; $p < 0.001$). As for girls, those performed either VR or INW + VR training protocols showed significantly lower heart rate values (**Figure 4A**; $p < 0.001$). Plus, girls performing either INW or VR training protocols had lower maximal systolic blood pressure values after four-week (**Figure 4B**; $p < 0.01$). On the other hand, maximal diastolic blood pressure and SpO2 values had not altered among all boys and girls regarding various training protocols following four-week training protocols (**Figure 4C**,**D**; $p > 0.05$). Contrarily, as for maximal MvO2 values, four training groups (i.e., boy-INW, boy-VR, girl-INW, and girl-INW + VR groups) had significantly lower values after four-week workouts (**Figure 4E**; $p < 0.001$).

## 3.4. Alternation of hemodynamic indexes at post-exercise (recovery) status following various training protocol interventions

At recovery condition, the heart rate values did not change among girls and boys following different four-week training protocols (i.e., INW, VR, and INW + VR) (**Figure 5A**, $p > 0.05$). As for recovery systolic blood amounts, the values dropped among individuals who performed VR training protocol (i.e., girl-VR and boy-VR groups) following four-week workout (**Figure 5B**; $p < 0.01$). Whereas, some hemodynamic parameters (i.e., diastolic blood pressure, and SpO2) did not change among girls and boys following different four-week training protocols (i.e., INW, VR, and INW + VR) (**Figure 5C**,**D**; $p > 0.05$). On the other hand, resting MvO2 had significantly lower amounts among girls who performed either VR or INW + VR training protocols as well as boys who performed VR training protocol after four-week workouts (**Figure 5E**, $p < 0.001$).

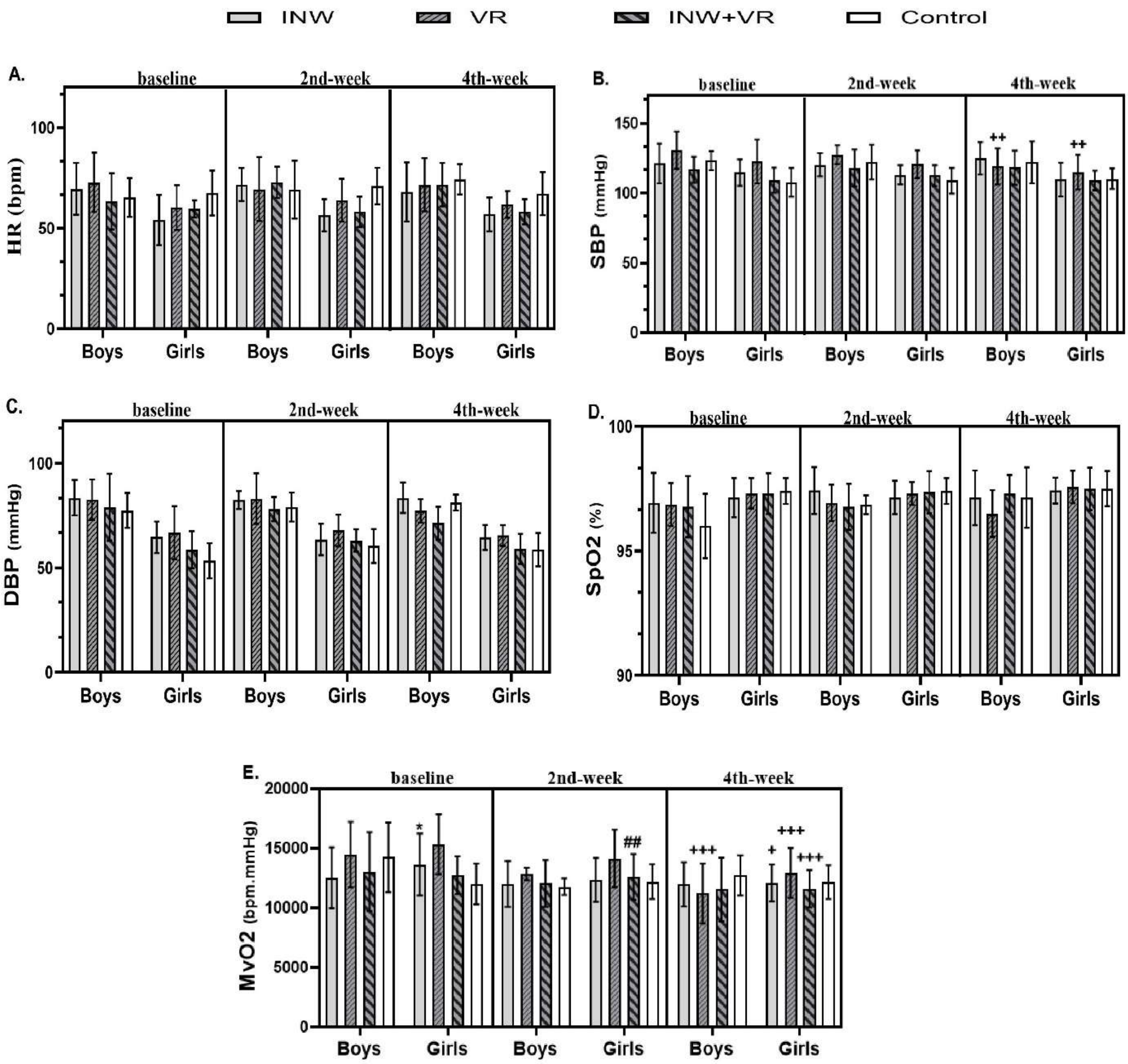


**Figure 5.** Impact of various training protocols (i.e., INW, VR, and INW + VR) on recovery hemodynamic indexes (mean ± standard deviation) among internet-addicted girls and boys. **(A)** The influences of different training interventions on recovery HR values in IA boys and girls following the four weeks of training protocols; **(B)** The influences of different training interventions on recovery SBP values in IA boys and girls following the four weeks of training protocols; **(C)** The influences of different training interventions on recovery DBP values in IA boys and girls following the four weeks of training protocols; **(D)** The influences of different training interventions on recovery $SpO_2$ values in IA boys and girls following the four weeks of training protocols; **(E)** The influences of different training interventions on recovery $MvO_2$ values in IA boys and girls following the four weeks of training protocols.

Abbreviations; INW, interval Nordic walking protocol; VR, virtual reality training protocol; INW + VR, combined INW and VR training protocols; HR, heart rate; SBP, systolic blood pressure; DBP, diastolic blood pressure; SpO2, blood oxygen saturation; MvO2, the myocardial volume oxygen.

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, Differences between baseline and 2nd-week; + $P < 0.05$, ++ $P < 0.01$, +++ $P < 0.001$, Differences between baseline and 4th-week; # $P < 0.05$, ## $P < 0.01$, ### $P < 0.001$, Differences between the 2nd-week and 4th-week.

### 3.5. Alternation of cardiorespiratory index (VO2max) and O2 Pulse following various training protocol interventions

Regarding various training protocols (i.e., INW, VR, and INW + VR), VO2max elevated significantly among internet-addicted boys and girls compared to control groups, especially following four-week training protocols (**Figure 6A**; $p < 0.001$). Similarly, as for O2 Pulse, all girl-training protocol groups (i.e., girl-INW, girl-VR, and girl-INW + VR) and the boy-VR group showed significant values, especially after four-week workouts (**Figure 6B**; $p < 0.001$).

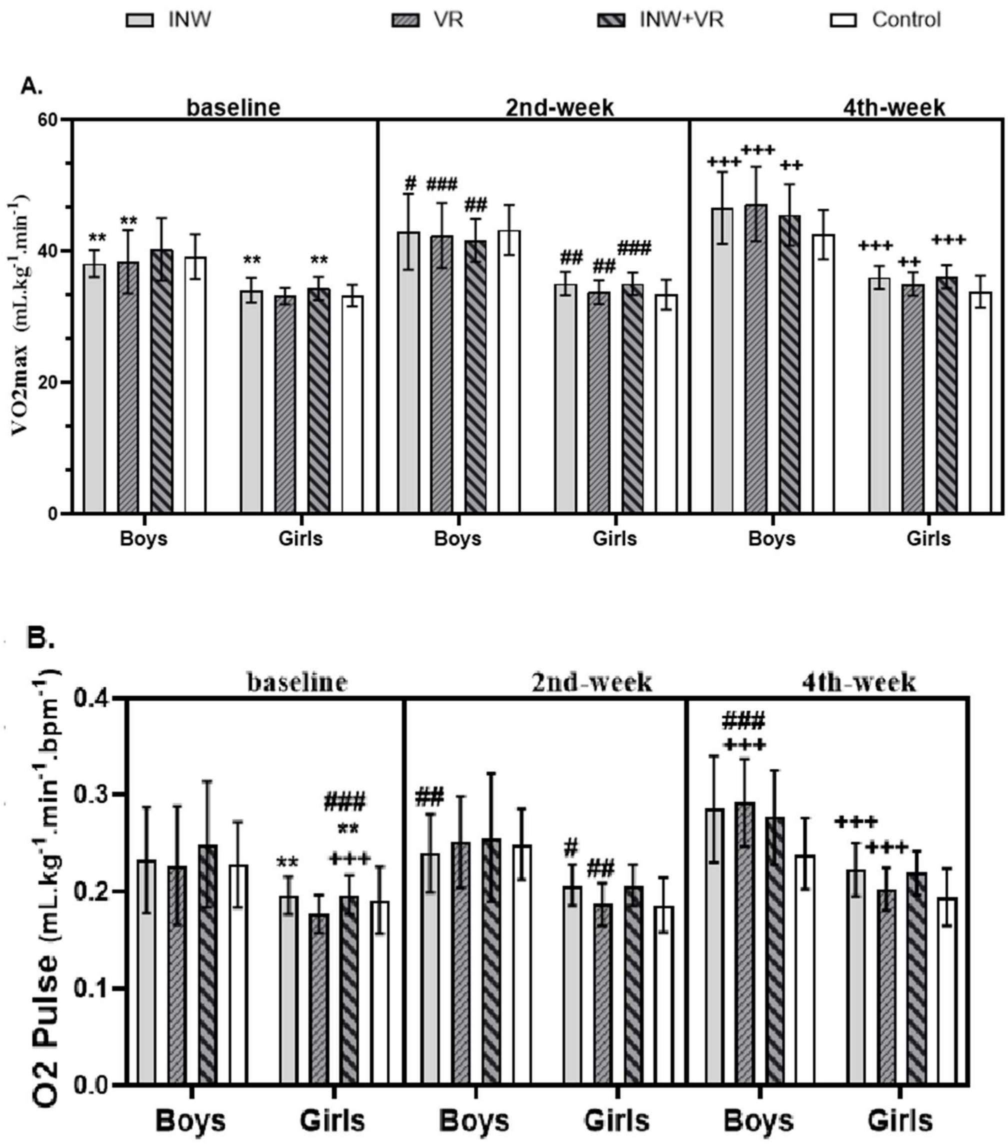


**Figure 6.** Impact of various training protocols (i.e., INW, VR, and INW + VR) on the cardiorespiratory index (VO2max) and O2 Pulse (mean ± standard deviation) among internet-addicted boys and girls. **(A)** The influences of different training interventions on VO2max values in IA boys and girls following the four weeks of training protocols; **(B)** The influences of different training interventions on O2 Pulse values in IA boys and girls following the four weeks of training protocols.

Abbreviations; INW, interval Nordic walking protocol; VR, virtual reality training protocol; INW + VR, combined INW and VR training protocols; VO2max, maximum oxygen consumption; O2 Pulse, oxygen pulse.

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, Differences between baseline and 2nd-week; + $P < 0.05$, ++ $P < 0.01$, +++ $P < 0.001$, Differences between baseline and 4th-week; # $P < 0.05$, ## $P < 0.01$, ### $P < 0.001$, Differences between the 2nd-week and 4th-week.

# 4. Discussion

Regarding our knowledge, the current research is among the first VR studies that investigated the separated and combined effects of VR and INW on central obesity indices and VO2max among internet-addicted teenagers during 2- and 4-week training protocol interventions. The result illustrated that applying VR technology was beneficial for body composition and cardiorespiratory indices' improvements among boys and girls. Interestingly, the combination VR and INW (VR + INW) protocol did not have any significant differences compared to the separated VR and INW training protocols, which means each training protocol intervention (i.e., VR, INW, and VR + INW) positively altered central obesity indices and improved cardiorespiratory fitness among IA teenagers. This body composition improvement was consistent with increasing cardiorespiratory index (VO2max) among internet-addicted boys and girls. In addition, the greatest impact on central obesity happened when teenagers performed the long-term training protocols (4 weeks vs 2 weeks), which expresses the undeniable effectiveness of regular physical activities and training on controlling obesity and related problems, especially in a longer period.

In many societies, technological advances and some barriers have made people avoid participating in exercise activities, especially among children and adolescents (in terms of safety issues and occupied situation of families), resulting in the occurrence of problems related to poor mobility and sedentary lifestyles, which should be acknowledged that there is no escape from their consequences in many cases. Evidence declares that internet addiction is associated with problem occurrences in sleep quality and lifestyle [55], obesity and body-composition-related issues [6,56], musculoskeletal problems [11], and the decline of academic performance [57]. Similarly, studies express that there is a positive correlation between internet addiction, obesity, and weight gain, especially in teenagers [6]. Therefore, researchers are seeking qualified strategies to control/modulate the side effects of internet-related equipment overuse. Accordingly, during the last decade, it has been reported that targeted physical activities can be considered as a suggested therapy and also an alternative for medicine and psychological treatments of internet addiction among various groups [10,14,23]. To illustrate, regular physical activities reduced the internet-addicted consequences like decreasing the duration of being online and the internet addiction severity [23], body composition improvement [27,28,30], improving cardiometabolic indices [25], and VO2max [58].

Although evidence has reported that boys are more active than girls [59–61], research literature shows conflicted regarding gender impacts on internet addiction [3]. For instance, Shek and Yu (2016) reported that internet addictive behavior was significantly higher among male high school adolescents [62]. Although Chiu et al. (2013) expressed that IA female college students were more addicted to smartphones compared to male students [63], Malik and Khan (2015) noted no gender predominance in Facebook addictions [64]. Similarly, it has been reported that problematic internet usage among university students without any gender differences [65]. Whereas, Alavi et al. (2011) illustrated that male university students are at three times greater risk of IA development compared to females [66]. Thus, regarding gender differences and internet addiction status, the varied outcomes could stem from multiple factors including cultural values, internet access, institutional policies, personal habits, and so on [3]. Additionally, province researches have illustrated that there is a negative relationship between physical activity levels and IA among adolescents regarding sex differences, which means internet-addicted boys and girls have similar less physical activity [67,68].

It is reported that performing an aerobic interval training causes the betterment aerobic capacity even following a short-term exercise protocol [69,70] because of challenging the heart's pumping ability [71]. Also, based on informal comments and compared to continuous training protocols, interval training could be more motivating for individuals since it has variety of training procedure per exercise session [71]. In our study, the central obesity parameters significantly lessened among girls in both groups performing INW training protocols (i.e., INW and VR + INW groups) for 4 weeks. These changes were aligned with increasing the cardiorespiratory fitness index (VO2max), which was observed in either internet-addicted girls or boys. Although the present study duration was relatively short due to some research limitations in female and male adolescent populations, study literature revealed that performing INW training protocols has greater influences on body calorie consumption rather than regular walking as it involves both upper- and lower-body [72,73], which subsequently affects body composition and cardiorespiratory fitness. Additionally, it is expressed that INW improves the strength of both lower [73,74] and upper limbs [58,73], considerably. These beneficial alternations stem from applying the canes while walking, which involves the majority of muscle mass in the upper body and arms during walking [25–27]. On the other hand, during performing NW, the upper-body muscular activities boosted the energy expenditure by increased oxygen consumption [75]. Subsequently, it elevates fat free mass and basal metabolism [72], which lead to weight loss and reduction of waist circumference, BMI [76–78], and percentage of body fat [76,77].

Likewise, NW protocol is considered as an easy-universal type of physical activity in which the activity pattern is suitable for all group populations regarding age, culture, gender, and educational or income level. On the other hand, unlike many sports and physical activities, it does not require expensive equipment and special skills, which can be often performed outdoors. In addition, performing physical activities outdoors such as parks and natural environments have greater advantages in reducing physical-mental stress and improving health levels compared to indoors [79,80]. Thus, its popularity has risen among people these days. Although long-term training courses are required for significant changes in body composition and performing one-month training protocol is too short for observing significant alternation of central obesity among IA girls and boys, in this study, it seems that the reduction of some central obesity indices (i.e., ABSI and CI) among IA girls during this relatively short time duration can be initially caused by the sedentary lifestyles, pattern of NW training (i.e., simultaneous involvement of upper and lower limbs), and also probable-less fatigue related to training in parks and/or applying interval NW pattern (i.e., recovery periods between exercises) in comparison with other researches.

Innovative technological advances (i.e., virtual reality glasses) have provided opportunities for promoting physical activities (PA) through attractive and entertaining methods. Several studies declared that VR activities could influence the mental and physical health of players, positively. In this study, the second aim was to investigate the effects of VR training on the body composition among IA girls and boys following 2- and 4-week training protocol. The results express that performing the VR training protocol for 4 weeks improved the body composition among IA girls, and also the combined VR and INW training protocol (i.e., VR + INW) caused a noticeable improvement in body composition among both IA girls and boys following the 4-week training intervention. Even though there are just a few investigations to compare the findings, Lee and Kim (2018) evaluated the effects of 4-week VR training on the body composition of 21 male university students and they noted a significant decrease in BMI and body fat percentage [34]. Recently, it has been reported that an 8-week VR training protocol can result in reduced BMI values in comparison with the baseline levels among overweight middle-aged women. Also, this study revealed that this VR training protocol can be considered an effective home exercise program for controlling obesity [81]. In addition, another study was conducted about the effectiveness of a controlled VR trial on fitness and cardiometabolic indices of 24-year-old women, which confirmed VR training significantly improved upper-and-lower muscular strength (1-RM), muscular endurance (85% 1-RM), peak leg power, and VO2max while lessened body fat%, systolic BP, and level of perceived exertion during workouts [82]. Evidence states that performing VR training activates the small muscles in the body, which are not often involved during regular physical activities such as regular walking. Plus, VR training is performed symmetrically and requires bilateral movements, therefore, it activates the central muscles and ultimately increases trunk stability [34,83]. In this study, it seems that the body composition changes can be attributed to the call of small muscles along with larger muscles during the combined VR + INW training protocol among sedentary-IA girls and boys.

Evidence illustrates that performing VR for a long time may be associated with its enjoyable impacts which distract the individuals' attention from body sensations resulting in discomfort feeling while any conventional exercise sessions [83,84], especially among overweight children [84]. To prove that, Deforche and De Bourdeaudhuij (2015) reported that music distraction can influence the extension of the running intensity and distance [85]. The evidence expressed that training under VR condition and environment would help to perform intense exercise while being distracted from the discomfort feeling resulted by such training protocols [86]. Moreover, Yao and Kim (2019) also reported that the individuals' psychological arousal and their presence level boosted during the training protocol [86]. Therefore, based on our knowledge, our study is aligned with other VR researches, which recommends considering VR method as a beneficial exercise training protocol.

## 5. Research limitations

This study was conducted among internet-addicted adolescent boys and girls, which faced some limitations. Firstly, the sample size of the teenage subjects was small because it was difficult to find IA individuals which led us not to be able of gathering a larger sample size. Secondly, the present study was conducted during the educational timeframe which resulted in considering the time limitation of students' academical duties, therefore, it was not possible to extend the study timeline. Another reason for short duration of the training protocols was due to the lack of parental cooperation, which itself stemmed from the cultural issues of the society and the logical concerns of the families, and also the lack of time to deal with the leisure activities because of their educational duties and responsibilities. Additionally, we were not able to control the individuals' diet, completely. In other words, although we generally recommended them to observance a healthy diet during the research timeline and kindly asked them not to change their eating habits, more strict control of diet was avoided since boys and girls were in the growth and puberty periods and also based on following the ethical issues. In addition, the current study aimed to track the physical-parameter changes following performing different training protocols among IA girls and boys, therefore, NO psychological tests related to measuring mental health were conducted. Subsequently, we kindly recommend that future investigation consider the mental health tests as well. Plus, with school co-operation, a combined VR + INW protocol can be applied as a physical education course during one semester which maybe solves parental concerns.

## 6. Conclusion

Our study contributes some improved hemodynamical cardiorespiratory indices and reduced central obesity following performing a 4-week VR training protocol among internet-addicted girls and boys, especially when it was combined with interval Nordic walking (INW) training protocol. These observations express that expected improvements depend on the long-term implementation (4 weeks vs. 2 weeks) of VR training interventions, especially for central obesity indices. Also, it could be recommended that a combined VR-INW training protocol would be associated with potential advantages on health status among internet-addicted girls and boys, which can be considered as a crucial non-pharmacological strategy to prevent a sedentary lifestyle and maintain health status. Regarding the existing limitations in sports spaces (i.e., gyms) and the financial problems of expensive costs of private sports clubs on the one hand, and the simplicity and low cost of interval Nordic walking in natural environments on the other hand, we recommend applying this training mode among children and teenagers for physical fitness related to health purposes. Similarly, the VR training protocols can also be used for longer periods in house environments all year long.

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## References

1. Marciano L, Camerini A-L, Schulz PJ. Neuroticism and internet addiction: What is next? A systematic conceptual review. Personality and individual differences. 2022; 185: 111260.
2. Mathew P, Raman K. Impact of problematic internet use on the academic stress and academic performance among adolescents in selected school, Kochi Kerala, India. World Journal of Advanced Research and Reviews. 2021; 12(2): 109–119.
3. Khan MA, Shabbir F, Rajput TA. Effect of gender and physical activity on internet addiction in medical students. Pakistan journal of medical sciences. 2017; 33(1): 191.
4. Zhou K, Zhu X, Chen B-B. Understanding the link between social relationships and adolescent Internet addiction: Perspectives from two approaches to well-being. Computers in Human Behavior. 2024; 151: 107995.
5. Tang H, Li Y, Dong W, et al. The relationship between childhood trauma and internet addiction in adolescents: A meta-analysis. Journal of behavioral addictions. 2024; 13(1): 36–50.
6. Durmus G, Ortabag T, Ozdemir S. Determining the relationship between obesity and problematic internet use among adolescents. Iranian Journal of Public Health. 2021; 50(9): 1796.
7. Tsitsika AK, Andrie EK, Psaltopoulou T, et al. Association between problematic internet use, socio-demographic variables and obesity among European adolescents. The European Journal of Public Health. 2016; 26(4): 617–622.
8. Daşdemir F, Orbatu D, Bektaş M, Özkan B. Impact of the coronavirus disease 2019 pandemic on obesity, internet addiction, and sleep quality in adolescents. Journal of Pediatric Nursing. 2022; 66: 196–201.
9. Poskotinova LV, Krivonogova OV, Zaborsky OS. Cardiovascular response to physical exercise and the risk of Internet addiction in 15–16-year-old adolescents. Journal of Behavioral Addictions. 2021; 10(2): 347–351.
10. Lin L, Liu J, Cao X, et al. Internet addiction mediates the association between cyber victimization and psychological and physical symptoms: moderation by physical exercise. BMC psychiatry. 2020; 20: 1–8.
11. Mustafaoglu R, Yasaci Z, Zirek E, et al. The relationship between smartphone addiction and musculoskeletal pain prevalence among young population: A cross-sectional study. The Korean journal of pain. 2021; 34(1): 72–81.
12. Yang G, Cao J, Li Y, et al. Association between internet addiction and the risk of musculoskeletal pain in Chinese college freshmen–a cross-sectional study. Frontiers in psychology. 2019; 10: 1959.
13. Güneş M, Demirer B, Şimşek A. The relationship between internet addiction with eating disorders and musculoskeletal health among university students. Journal of Public Health. 2023; 31(12): 2115–2121.
14. Li S, Wu Q, Tang C, et al. Exercise-based interventions for internet addiction: neurobiological and neuropsychological evidence. Frontiers in psychology. 2020; 11: 1296.
15. Santos VA, Freire R, Zugliani M, et al. Treatment of Internet addiction with anxiety disorders: Treatment protocol and preliminary before-after results involving pharmacotherapy and modified cognitive behavioral therapy. JMIR research protocols. 2016; 5(1): e5278.
16. Kuss DJ, Pontes HM. Internet addiction. Hogrefe Publishing GmbH; 2018.
17. Wölfling K, et al. Treatment outcomes in patients with internet addiction: A clinical pilot study on the effects of a cognitive-behavioral therapy program. BioMed research international. 2014; 2014(1): 425924.
18. Malak MZ. Internet addiction and cognitive behavioral therapy. In: Senormanci O, Senormanci G (editors). Cognitive Behavioral Therapy and Clinical Applications. IntechOpen; 2018. 10.
19. Xu L-X, Wu L-L, Geng X-M, et al. A review of psychological interventions for internet addiction. Psychiatry Research. 2021; 302: 114016.
20. Liu W, Mirza F, Narayanan A, Souligna S. Is it possible to cure Internet addiction with the Internet? AI & SOCIETY. 2020; 35: 245–255.
21. Tsai J-K, Lu W-S, Hsiao RC, et al. Relationship between difficulty in emotion regulation and internet addiction in college students: A one-year prospective study. International Journal of Environmental Research and Public Health. 2020; 17(13): 4766.

22. Liang L, Zhu M, Dai J, et al. The mediating roles of emotional regulation on negative emotion and internet addiction among Chinese adolescents from a development perspective. Frontiers in psychiatry. 2021; 12: 608317.
23. Koçak Ç. How does regular exercise affect internet addiction level in university students? Physical education of students. 2019; 23(4): 186–190.
24. Jurikova J, Kyzlink J. Benefits of nordic walking. Discobolul-Physical Education, Sport & Kinetotherapy Journal. 2020; 59.
25. Kettinen J, Tikkanen H, Venojärvi M. Comparative effectiveness of playing golf to Nordic walking and walking on acute physiological effects on cardiometabolic markers in healthy older adults: A randomised cross-over study. BMJ Open Sport—Exercise Medicine. 2023; 9(1).
26. Liu Y, Xie W, Ossowski Z. The effects of Nordic Walking on health in adults: A systematic review. Journal of Education, Health and Sport. 2023; 13(1): 188–196.
27. Grigoletto A, Mauro M, Oppio A, et al. Effects of Nordic Walking training on anthropometric, body composition and functional parameters in the middle-aged population. International Journal of Environmental Research and Public Health. 2022; 19(12): 7433.
28. Gobbo S, Bullo V, Roma E, et al. Nordic walking promoted weight loss in overweight and obese people: A systematic review for future exercise prescription. Journal of Functional Morphology and Kinesiology. 2019; 4(2): 36.
29. Cebula A, Tyka AK, Tyka A, et al. Physiological response and cardiorespiratory adaptation after a 6-week Nordic Walking training targeted at lipid oxidation in a group of post-menopausal women. Plos one. 2020; 15(4): e0230917.
30. Kantorowicz M, Szymura J, Szygula Z, et al. Nordic walking at maximal fat oxidation intensity decreases circulating asprosin and visceral obesity in women with metabolic disorders. Frontiers in Physiology. 2021; 12: 726783.
31. Quaye L, Ansah Owiredu WKE, Amidu N, et al. Comparative abilities of body mass index, waist circumference, abdominal volume index, body adiposity index, and Conicity index as predictive screening tools for metabolic syndrome among apparently healthy Ghanaian adults. Journal of obesity. 2019; 2019.
32. Szpak A, Michalski SC, Loetscher T. Exergaming with beat saber: An investigation of virtual reality aftereffects. Journal of Medical Internet Research. 2020; 22(10): e19840.
33. Park SJ, Lee JW. Effects of Virtual Reality Pilates Training on Duration of Posture Maintenance and Flow in Young, Healthy Individuals: Randomized Crossover Trial. JMIR Serious Games. 2023; 11(1): e49080.
34. Lee HT, Kim YS. The effect of sports VR training for improving human body composition. EURASIP Journal on Image and Video Processing. 2018; 2018(1): 1–5.
35. Ridout B, Kelson J, Campbell A, Steinbeck K. Effectiveness of virtual reality interventions for adolescent patients in hospital settings: Systematic review. Journal of medical Internet research. 2021; 23(6): e24967.
36. Shahbal S, Khan A, Ahmed M, et al. Technology Addiction, Sleep Disturbance and Physical Inactivity Among Psychiatric Patients. Int J Clin Skill. 2016; 16: 231.
37. Demin D, Poskotinova L. Neurophysiologic Reactions during Heart Rate Variability Biofeedback Session in Adolescents with Different Risk of Internet Addiction. International Journal of Environmental Research and Public Health. 2022; 19(5): 2759.
38. Qian B, Huang M, Xu M, Hong Y. Internet use and quality of life: The multiple mediating effects of risk perception and internet addiction. International Journal of Environmental Research and Public Health. 2022; 19(3): 1795.
39. Baker R, Schmidt U, Frewer A. The Declaration of Helsinki and the foundations of global bioethics. In: Schmidt U, Frewer A, Sprumont D (editor). Ethical research: The declaration of Helsinki, and the past, present, and future of human experimentation. Oxford University Press; 2020. pp. 47–58.
40. Pan T. Psychological and exercise interventions for teenagers with internet addiction disorder (Portuguese). Revista Argentina de Clínica Psicológica. 2020; 29(2): 226.
41. Saadati HM, Mirzaei H, Okhovat B, Khodamoradi F. Association between internet addiction and loneliness across the world: A meta-analysis and systematic review. SSM-population health. 2021; 16: 100948.
42. Young KS. Internet addiction test. Center for on-line addictions. 2009.
43. Plungytė V, Dudonienė V, Varnienė L. Is Nordic Walking more Effective than Walking without Poles Treating Overweight and Obesity in Adolescents. Reabilitacijos mokslai: slauga, kineziterapija, ergoterapija. 2015; 2(13).
44. Kuzina E, Spivak E, Nezhkina N. Personification of nordic walking course in children with bronchial asthma depending on physical health level and disease control. Perm Medical Journal. 2020; 37(6): 48–53.

45. Sousa CV, Hwang J, Cabrera-Perez R, et al. Active video games in fully immersive virtual reality elicit moderate-to-vigorous physical activity and improve cognitive performance in sedentary college students. Journal of Sport and Health Science. 2022; 11(2): 164–171.
46. Li S. The effect of using virtual reality equipment on people's motivation to exercise [Bachelor's thesis]. University of Twente; 2021.
47. Young KS. Internet addiction: The emergence of a new clinical disorder. Cyberpsychology & behavior. 2009; 1(3).
48. Toozandehjani A, Mahmoodi Z, Rahimzadeh M, et al. The predictor role of Internet addiction in high-risk behaviors and general health status among Alborz students: A structural equation model. Heliyon. 2021; 7(5).
49. Xiao M, Chen C, Wang J, et al. Association of adiposity indices with prehypertension among Chinese adults: A cross-sectional study. The Journal of Clinical Hypertension. 2023.
50. Lokpo SY, Ametefe CY, Osei-Yeboah J, et al. Performance of Body Adiposity Index and Relative Fat Mass in Predicting Bioelectric Impedance Analysis-Derived Body Fat Percentage: A Cross-Sectional Study among Patients with Type 2 Diabetes in the Ho Municipality, Ghana. BioMed Research International. 2023; 2023.
51. Gomez-Peralta F, Abreu C, Cruz-Bravo M, et al. Relationship between "a body shape index (ABSI)" and body composition in obese patients with type 2 diabetes. Diabetology & metabolic syndrome. 2018; 10(1): 1–8.
52. Buekers J, Theunis J, De Boever P, et al. Wearable finger pulse oximetry for continuous oxygen saturation measurements during daily home routines of patients with chronic obstructive pulmonary disease (COPD) over one week: observational study. JMIR mHealth and uHealth. 2019; 7(6): e12866.
53. Lubans DR, Morgan PJ, Callister R, Collins CE. The relationship between pedometer step counts and estimated VO2Max as determined by a submaximal fitness test in adolescents. Pediatric Exercise Science. 2008; 20(3): 273–284.
54. Wasserman K, Hansen JE, Sue DY, et al. Principles of exercise testing and interpretation. Journal of Cardiopulmonary Rehabilitation and Prevention. 1987; 7(4): 189.
55. Andrade ALM, Enumo SRF, Passos MAZ, et al. Problematic internet use, emotional problems and quality of life among adolescents. Psico-USF. 2021; 26: 41–51.
56. Chen C-Y, Chen I-H, O'Brien KS, et al. Psychological distress and internet-related behaviors between schoolchildren with and without overweight during the COVID-19 outbreak. International Journal of Obesity. 2021; 45(3): 677–686.
57. Hayat AA, Kojuri J, Amini M. Academic procrastination of medical students: The role of Internet addiction. Journal of advances in medical education & professionalism. 2020; 8(2): 83.
58. Lee HS, Park JH. Effects of Nordic walking on physical functions and depression in frail people aged 70 years and above. Journal of physical therapy science. 2015; 27(8): 2453–2456.
59. Trost SG, Pate RR, Sallis JF, et al. Age and gender differences in objectively measured physical activity in youth. Medicine & science in sports & exercise. 2002; 34(2): 350–355.
60. Vasickova J, Groffik D, Frömel K, et al. Determining gender differences in adolescent physical activity levels using IPAQ long form and pedometers. Annals of Agricultural and Environmental Medicine. 2013; 20(4).
61. de Looze M, Elgar FJ, Currie C, et al. Gender inequality and sex differences in physical fighting, physical activity, and injury among adolescents across 36 countries. Journal of Adolescent Health. 2019; 64(5): 657–663.
62. Shek DT, Yu L. Adolescent internet addiction in Hong Kong: prevalence, change, and correlates. Journal of pediatric and adolescent gynecology. 2016; 29(1): S22-S30.
63. Chiu S-I, Hong F-Y, Chiu S-L. An analysis on the correlation and gender difference between college students' Internet addiction and mobile phone addiction in Taiwan. International scholarly research notices. 2013; 2013.
64. Malik S, Khan M. Impact of facebook addiction on narcissistic behavior and self-esteem among students. J Pak Med Assoc. 2015; 65(3): 260–263.
65. Fernández-Villa T, Ojeda JA, Almaraz-Gómez A, et al. Problematic Internet Use in University Students: Associated factors and differences of gender. Adicciones. 2015; 27(4).
66. Alavi SS, Maracy MR, Jannatifard F, Eslami M. The effect of psychiatric symptoms on the internet addiction disorder in Isfahan's University students. Journal of research in medical sciences: The official journal of Isfahan University of Medical Sciences. 2011; 16(6): 793.
67. Dang AK, Nathan N, Le QNH, et al. Associations between internet addiction and physical activity among Vietnamese youths and adolescents. Children and Youth Services Review. 2018; 93: 36–40.

68. Abbasi GA, Jagaveeran M, Goh Y-N, Tariq B. The impact of type of content use on smartphone addiction and academic performance: Physical activity as moderator. Technology in Society. 2021; 64: 101521.
69. Wisløff U, Støylen A, Loennechen JP, et al. Superior cardiovascular effect of aerobic interval training versus moderate continuous training in heart failure patients: A randomized study. Circulation. 2007; 115(24): 3086–3094.
70. Helgerud J, Høydal K, Wang E, et al. Aerobic high-intensity intervals improve VO2max more than moderate training. Medicine & science in sports & exercise. 2007; 39(4): 665–671.
71. Tjønna AE, Lee SJ, Rognmo Ø, et al. Aerobic interval training versus continuous moderate exercise as a treatment for the metabolic syndrome: A pilot study. Circulation. 2008; 118(4): 346–354.
72. Bullo V, Gobbo S, Vendramin B, et al. Nordic walking can be incorporated in the exercise prescription to increase aerobic capacity, strength, and quality of life for elderly: A systematic review and meta-analysis. Rejuvenation research. 2018; 21(2): 141–161.
73. Parkatti T, Perttunen J, Wacker P, Improvements in functional capacity from Nordic walking: A randomized controlled trial among older adults. Journal of Aging and Physical Activity. 2012; 20(1): 93–105.
74. Bieler T, Siersma V, Magnusson SP, et al. In hip osteoarthritis, Nordic Walking is superior to strength training and home-based exercise for improving function. Scandinavian journal of medicine & science in sports. 2017; 27(8): 873–886.
75. Sugiyama K, Kawamura M, Tomita H, Katamoto S. Oxygen uptake, heart rate, perceived exertion, and integrated electromyogram of the lower and upper extremities during level and Nordic walking on a treadmill. Journal of Physiological Anthropology. 2013; 32: 1–9.
76. Ossowski ZM, Skrobot W, Aschenbrenner P, et al. Effects of short-term Nordic walking training on sarcopenia-related parameters in women with low bone mass: A preliminary study. Clinical interventions in aging. 2016: 1763–1771.
77. Song M-S, Yoo Y-K, Choi C-H, Kim N-C. Effects of nordic walking on body composition, muscle strength, and lipid profile in elderly women. Asian nursing research. 2013; 7(1): 1–7.
78. Kawamoto R, Kohara K, Katoh T, et al. Effect of weight loss on central systolic blood pressure in elderly community-dwelling persons. Hypertension Research. 2014; 37(10): 933–938.
79. Bojorquez I, Ojeda-Revah L. Urban public parks and mental health in adult women: Mediating and moderating factors. International Journal of Social Psychiatry. 2018; 64(7): 637–646.
80. Dadvand P, Bartoll X, Basagaña X, et al. Green spaces and General Health: Roles of mental health status, social support, and physical activity. Environment international. 2016; 91: 161–167.
81. Seo E-Y, Kim Y-S, Lee Y-J, Hur M-H. Virtual Reality Exercise Program Effects on Body Mass Index, Depression, Exercise Fun and Exercise Immersion in Overweight Middle-Aged Women: A Randomized Controlled Trial. International Journal of Environmental Research and Public Health. 2023; 20(2): 900.
82. Mologne MS, Hu J, Carrillo E, et al. The Efficacy of an Immersive Virtual Reality Exergame Incorporating an Adaptive Cable Resistance System on Fitness and Cardiometabolic Measures: A 12-Week Randomized Controlled Trial. International Journal of Environmental Research and Public Health. 2022; 20(1): 210.
83. Polechoński J, Nierwińska K, Kalita B, Wodarski P. Can physical activity in immersive virtual reality be attractive and have sufficient intensity to meet health recommendations for obese children? A pilot study. International journal of environmental research and public health. 2020; 17(21): 8051.
84. Banos RM, Escobar P, Cebolla A, et al. Using virtual reality to distract overweight children from bodily sensations during exercise. Cyberpsychology, Behavior, and Social Networking. 2016; 19(2): 115–119.
85. Deforche B, De Bourdeaudhuij I. Attentional distraction during exercise in overweight and normal-weight boys. International journal of environmental research and public health. 2015; 12(3): 3077–3090.
86. Yao S, Kim G. The effects of immersion in a virtual reality game: Presence and physical activity. In: HCI in Games: First International Conference, HCI-Games 2019, Proceedings of the 21st HCI International Conference, HCII 2019; 26–31 July 2019; Orlando, FL, USA. pp. 234–242.

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Article

# Perception about malaria and understanding of malaria prevention information in selected rural communities of Nigeria

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**Abstract:** Studies have shown that social and cultural factors affect how people perceive diseases. Thus; the area of perception about malaria has been the focus of several scholarly interventions. However there has been limited investigation of the perception of people and their understanding of malaria prevention information in Nigeria. This study; anchored on the Health Belief Model; investigated the perception of selected rural dwellers in Oyo and Osun states; Nigeria; about malaria and their understanding of available malaria prevention information provided by Roll Back Malaria (RBM) in the two states. The study used Survey; Focus Group Discussion and analysis of secondary data. There were 2120 survey respondents selected through multi-stage sampling across 10 local government areas of Oyo and Osun states and 96 participants in 16 focus groups involving men; women and expectant mothers. The results show that while the symptoms of malaria are well understood; the etiology is incorrectly believed. The respondents' recollection of the malaria prevention messages was low due to their limited exposure to the available information. Pearson Chi-Square test indicated significant relationship between perception of the rural dwellers and their utilisation of malaria prevention information. It is important to understand the perception dynamics that drive attitude towards malaria prevention as part of efforts towards achieving the SDG Goal3. Government should encourage broadcast stations to air malaria prevention jingles regularly; not based on programme funding; but as a part of social service among other efforts at devoting more resources to communication activities on the disease.

**Keywords:** malaria; perception; prevention; information; Nigeria; Roll Back Malaria

## 1. Introduction

Malaria is a life-threatening disease caused by parasites that are transmitted to people through the bites of infected Anopheles mosquitoes [1]. The mosquitoes bite mostly between sunset and dawn. There are four types of malaria parasites: Plasmodium falciparum; Plasmodium vivax; Plasmodium malariae; and Plasmodium ovale.

Malaria is one of the major public health problems in Africa; and Nigeria is no doubt the most affected in the continent [2]. Data from the World Health Organisation [1] indicates that globally; there were 249 million cases of malaria in 2022. Out of this figure; the African Region accounted for 233 million (94%) cases and 580,000 (95%) of deaths from the disease. The data indicates that Nigeria recorded 62.2 million cases; representing 26.7% of all cases reported among the four countries mostly affected by malaria in the region. Nigeria also shared the highest number of all malaria deaths (31.1%) in the period; followed by the Democratic Republic of the Congo (11.6%); Niger (5.6%) and the United Republic of Tanzania (4.4%). The risk of transmission exists throughout the country; all year round. However; the incidence of malaria is highest in the northern and north-eastern parts of thecountry [3].

WHO Regional Office for Africa [3] identified Ogun; Ondo; Osun; Ekiti and Lagos among the 24 states that have registered increased cases of malaria since 2010. Data from the [3] indicates that in 2021 Lagos recorded a total of 2.5 million cases of malaria; but only 9.6% of its residents reported sleeping under Insecticidal Treated Nets (ITN). In Ogun state; with 1.7 million cases during the same period; only 21.7 % of the population reported sleeping under ITN. Ondo state had a total of 1.6 million cases of malaria in the same period but only 17.7% of the population reported using ITN. In Osun state had a total of 1.7 million cases but only 35.3% of the population reported using ITN. Oyo state had a total of 2.8 million cases and only 31.2% of her population reported using ITN. In Ekiti state with a total of 1.2 million cases; only 9.9% of the population reported using ITN. Thus; the use of ITN is still comparatively very low in the south west region of Nigeria; thus, creating a challenge to the attainment of SDG Goal 3.

Nigeria's response to the malaria challenge is coordinated by the Nigerian national secretariat of Roll Back Malaria (RBM) Partnership; also known as the National Malaria Elimination Programme (NMEP) office. The RBM Partnership is a joint initiative of the World Health Organisation; the United Nations Children's Fund (UNICEF); the World Bank and the United Nations Development Program (UNDP). It was launched in 1998 and has Partner organisations and bodies that undertake specific tasks; such as initiating Advocacy; Communication and Social Mobilisation (ACSM) activities on malaria prevention in targeted communities [4].

Like many other health conditions; social-cultural factors affect the perception about the causes of malaria and subsequently attitude to its control [5]. People in different societies hold a variety of beliefs about the cause and transmission of malaria that vary according to cultural; educational; and economic factors. Such beliefs have direct consequences for both preventive and treatment-seeking behaviour as well as for activities to control malaria. This is why there is need to understand people's perceptions of malaria; and the social; political; cultural factors in which the disease occur as a critical element in mounting successful interventions (communication) programmes [6]. It is therefore imperative that people's perception and some of their cultural associations must be well understood in tackling the incidence of malaria. Also;the whole context of lives that give shape to these perceptions and behaviours must be clearly identified and accepted for a successful (behaviour) change to take place [7].

In south-eastern and south-western Nigeria; for example; excessive heat; over–work; sunlight; excessive sex; too much sun; mosquitoes; fried food; cold weather; dirty environment; weakness; alcohol; noise as well as witchcraft are perceived as possible causes of malaria [8]. Okeke and Okafor [9] found a correlation between education and correct knowledge of mosquitoes as cause of malaria. Their study also reported perception that the disease can be transmitted through breast milk; bodily contact; drinking dirty water; inhalation and sharing the same cup. Okwa and Ibidapo [10] found that 7.3 % of respondents from a Nigerian universitywho were Christians expressed confidence that prayer is the best cure for malaria while others; predominantly Muslims from Awori tribe; believed that local remedies were the best cure. Muhammad et al. [11] also found widespread wrong perception about the disease among Hausa Married Men in Mokola Community of Ibadan; Oyo State; Nigeria.

To tackle the challenge posed by malaria; the Nigerian government adopted the Global Strategic Plan on Roll Back Malaria (2005–2015) and domesticated its recommendations into her National Malaria Strategic Plan (2014–2020). The Strategic Plan included the creation of awareness; demand and appropriate use of malaria prevention products and the development of country-level advocacy and communication. It is therefore apt to examine the current state of perception about malaria; especially among rural people who have been exposed to the communication materials; vis-a-vis the goals of the Strategic Framework. None of the available studies on malaria perception examined the preventive information against which they investigated the perception and attitude of their respondents. This study is therefore able to fill that gap in the scholarly investigations about malaria and perception of selected populations. A positive perception about malaria will enhance the acceptance and utilisation of preventive measures and the achievement of the SDG Goal 3 of ensuring healthy lives and promoting well-being for all at all ages; among others.

In doing this; this study sought to achieve the following objectives:

1) examine how the Strategic Framework for Malaria Communication addresses wrong perception about malaria among the rural population
2) Investigate prevailing perception of rural dwellers in Oyo and Osun states about malaria and;
3) examine how the prevailing perception affect their attitude to the available prevention information.

## 2. Literature review

Many scholars have investigated various aspects of perception abut malaria among diverse populations in Nigeria with varied findings. Okwa and Ibidapo [10] studied the perception of cause and treatment of malaria among undergraduate students of Lagos State University and found that only about half of the respondents understood the cause of malaria while 25% attributed the disease to exposure to sunlight. In their own study; Omole et al. [12] assessed perceptions of malaria and the utilisation of long-lasting insecticide treated nets in a rural Niger Delta community in Nigeria. The study indicated a good perception of the cause of malaria among respondents but poor rate of ITN utilization. A subnational profiling analysis of regional differences as the main predictor of ITN ownership and use in Nigeria by Andrada et al. [13] using the Chi square automatic interaction detector (CHAID) model identified households in the South West; North Central and South-Central regions with low ITN ownership; and the general population in the South South; South East and North Central regions with low ITN use. Muhammad et al. [11] studied knowledge and perception of malaria among Hausa Married Men in Mokola Community of Ibadan; Oyo State; Nigeria and found very poor perception about the disease among the study population.

Duodu et al. [14] reviewed the 2018 Nigeria Demographic and Health Survey with their attention on Rural–urban dimensions of the perception of malaria severity and practice of malaria preventive measures and found that the association between perceived malaria severity and use of a treated bed net was only significant for rural women. The authors noted unexpected results indicating that rural Nigerian women who perceive malaria to be severe have a lower likelihood of using treated bed nets. On their part; Abiodun and Ilori [15] investigated caregivers' perception and determinants of delayed presentation of children with severe malaria in an emergency room in Benin City; Nigeria. According to the authors; there was a negative correlation between caregivers' perception of treatment ($r = -0.113$; $P = 0.21$) of convulsion in severe malaria and timing of presentation.

Outside Nigeria; Portugaliza et al. [16] did a qualitative study that examined community perceptions of malaria to inform elimination efforts in Southern Mozambique. The results indicated that participants in the study had a fragmented perception of malaria etiology but still related mainly to mosquito-mediated transmission. In Ghana; Aberese et al. [5] identified how restocking of LLINs was organized in health facilities; content of health information on LLINs given to ANC; as socio-cultural; environmental; economic and individual factors as some of the 'multiple level factors' that influenced use of LLIN among their respondents. In Brazil; Murta et al. [17] investigated the perception of Brazilian gold miners about malaria. The study found that gold miners were subjected to prejudice from the community due to forest diseases that they can transmit; among them malaria. Most of the miners themselves did not know how malaria transmission occurs; and associated its occurrence with contaminated water and food and they believed in the use of medicinal plants for treatment of malaria.

Although Nigeria has made some progress in tacking her malaria challenge; WHO [3] has identified some key challenges that are inhibiting the fight against the disease in the country. As a result of these challenges; the international agency estimated that 20% of all deaths in children under age of 5 years in 2021 were traceable to malaria. The challenge was worsened by the disruption to public health services occasioned by COVID-19 pandemic which the body estimated added 490,000 cases and 10,000 deaths from malaria in Nigeria. Even before the pandemic; according to WHO; malaria cases and deaths have actually been on the rise in Nigeria; since 2016. This; the body claimed; could be due to 'a mix of reducing intervention coverage; the spread of insecticide resistance reducing the effectiveness of ITNs; humanitarian emergencies and relatively high population growth. Another challenge worthy of note is that despite recent improvements; malaria parasitological diagnosis remains low in Nigeria. This has led to inappropriate treatment of patients and irrational use of malaria drugs. As such; only a quarter of all children with fever are tested; and among those who seek care; only 39% are tested.

Governments in the region are concerned about the rate of malaria among the population. Ezediuno [18] reported the Programme Manager; Osun State Malaria Elimination Control; Dr Olufemi Oroge as lamenting that despite efforts by states and the federal government; malaria remains a public health burden. According to him Osun state is not making progress as intended in meeting with target of the global strategy for eliminating malaria. In 2021; Reckitt Nigeria; makers of Mortein insecticide Brand; introduced it's "Mortein Fight to End Malaria" campaign in conjunction with the Ogun state government and National Malaria Elimination

Programme (NMEP); to support in the education and awareness of malaria prevention in Nigeria [19]. The partnership was meant to be executed through three main platforms: On-ground market and Community engagement activities; Digital Education and Radio engagement as well as sustained efforts through malaria programmes in schools.

Adewole et al. [20] investigated the trend and seasonality of malaria fever in Ogun State; Nigeria over a five year period (2016–2021) and also predicted its prevalence in the year 2023 using seasonal decomposition of time series (STL) method and ARIMA (Autoregressive Integrated Moving Average) modelling. The data indicated that there would be a 50% percent reduction in trends of malaria in the state in 2023 provided stakeholders employed appropriate preventive and control measures. One of such measures would be to ensure that residents of various communities have a proper perception of the disease and its prevention.

## 3. Study area

The study covered ten local government areas in two states of south-west Nigeria. The local government areas are: Obokun; Ejigbo; Irepodun; Boluwaduro and Orolu for Osun State and Afijio; Egbeda; Surulere; Orire and Atiba for Oyo state. **Figures 1** and **2** are maps of the two states from which the study areas were sampled.


**Figure 1.** Map of Oyo state showing the local government areas including the study area from the state.

Source: Oyo state government.

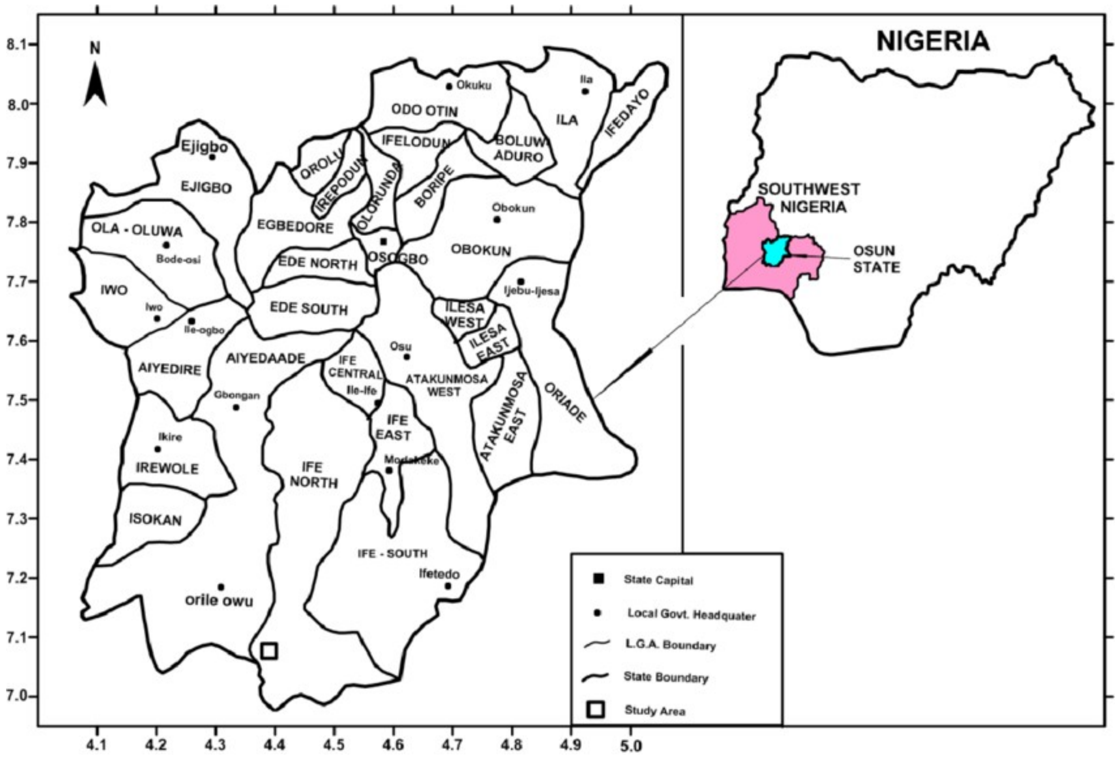


**Figure 2.** Map of Osun state showing the local government areas; including the study area from the state.

Source: Oyo state government.

## 4. Study design

This study employed the pragmatic paradigm of research design; which informed the choice of mixed methods of quantitative and qualitative. Pragmaticism approach of research design beliefs in the combination of quantitative and qualitative methods to generate data. The choice of this design is apt because it investigates the dynamics of perception about malaria; especially among rural dwellers in south-west Nigeria.

## 5. Sample size

The sample size for the survey was determined based on the population strength of the estimated population of 11,715,157. The survey therefore covered 2200 household members drawn from the 10 local government areas selected from Oyo and Osun states. The Focus Group Discussion (FGD) was made of 96 participants in 16 focus groups involving men; women and expectant mothers. Participants were selected through a multi-stage sampling procedure. Each discussion group comprised of six participants.

## 6. Sample technique/procedure

The sample for the survey was drawn using the multi-stage sampling procedure. The first step was to purposively select two neighbouring states from the six in the South-west zone which have contrasting features in their Advocacy; Communication and Social Mobilisation (ACSM) activities. Pre-field investigation indicated that while Oyo state had a functional ACSM team; Osun state did not. The two states therefore met the criterion for selection.

The second stage was through balloting; ten local government areas were selected from a list of 'rural local government areas' supplied by the Malaria Programme office/MAPS (for Oyo state) and Malaria Programme Office /ACCOMIN/AFRICARE (for Osun state) based on the definition of rurality by the National Population Commission. The balloting was done by two young girls; aged 7 and 10 years to eliminate the possibilities of bias from an adult. There was no provision for replacement since all the local government areas on the list were prequalified as rural and were supposed to have been exposed to malaria prevention messages through the various RBM Partner organisations working there; particularly Malaria Programme office/MAPS (for Oyo state) and Malaria Programme Office /ACCOMIN/AFRICARE (for Osun state). The result produced the following local government areas: Obokun; Ejigbo; Irepodun; Boluwaduro and Orolu for Osun State and Afijio; Egbeda; Surulere; Orire and Atiba for Oyo state.

In the third stage; two communities hosting Primary Health Centres (PHC) were purposively selected from each local government. They were chosen from a list of available PHCs in each of the selected local government areas on the basis of their being hosts to PHCs which was considered as a strong factor that would have exposed residents in the host communities more to malaria prevention information. The following communities were therefore selected in Osun state: Okeafola and Eyingbo (Irepodun LGA); Ilie and Owode (Orolu LGA); Masifa Ile and Ogbaagba (Ejigbo LGA); Ibokun and Imesi-Ile (Obokun LGA) while from Oyo state; the following communities were selected: Ilora and Awe (Afijio LGA); Igbonla and Ijawaya (Atiba LGA); Olodo and Kute (Egbeda LGA); Olorunda and Alapete (Orire LGA); Gambari and Igbon (Surulere LGA). From each community; the researcher employed the convenient sampling method to select available respondents for the survey questionnaire. The respondents were however in households and not within the PHCs.

For the Focus Group Discussion; the local government areas where the discussion took place were purposively selected on the recommendations of Malaria Programme Office/MAPS (for Oyo state) and Malaria Programme Office /ACCOMIN/AFRICARE (for Osun state) based on the perceived effectiveness of their malaria prevention activities. The result produced the following local government areas: Ogbomosho South; Oyo East; Afijio; Surulere in Oyo state and Irepodun; Orolu; Egbedore and Ejigbo in Osun state.From each local government; two PHCs were also selected purposively with the assistance of the Malaria Programme Officer (MPO) in each local government area based on the MPO's evaluation of the active malaria prevention activities of each PHC. The result produced the following PHCs: Ilogbo and Arowomole (Ogbomosho South); Jabata and Araromi (Oyo East); Fiditi and Akinmorin (Afijio); Iresaadu and Abaya Oje (Surulere) in Oyo state; Anwo and Afolu (Irepodun); Bolorunduro and Odo Oje (Orolu); Popo and Ola (Ejigbo) as well as Ido Osun and Olorunsogo (Egbedore) in Osun state.

Next; the MPO assisted the researcher in selecting six participants from the community hosting the PHC; made up of men; women and expectant mothers; who were duly informed one week ahead of their participation in the respective FGD session. They were men and women well known in the community for their involvement in community activities. Hence the focus group participants were selected through purposive sampling technique. Each PHC hosted one focus group.

## 7. Primary data collection

The study employed both primary and secondary data. For the primary data; a questionnaire was developed in English and Yoruba Languages to take care of respondents who might not be able to read or write in English. A Focus Group Discussion Guide was also used to collect qualitative data from FGD participants The questionnaire was based on the constructs of the Health Belief Model developed by Hochbaum; Rosenstock and Kegels along with others in the U.S. Public Health Services in the 1950s.The HBM is based on the understanding that a person will take a health-related action if such a person:

(a) feels that a negative health condition can be avoided;
(b) has a positive expectation that by taking a recommended action; he/she will avoid a negative health condition; and
(c) believes that he/she can successfully take a recommended health action.

Six constructs; Perceived Threat; Perceived Benefits; Perceived Barriers; Cues to Action; Motivating Factors and Self-Efficacy constitute the main pillars of the theory. The Model assumes that an individual’s action towards a preventive health measure will be based on his/her beliefs and attitudes. It acknowledges that that beliefs and attitudes are not spontaneous but the function of a progressive experience by the individual decision maker. It is for this reason that the model seeks to explain the demographic and socio-psychological variables which could influence the perception of an individual about his/her vulnerability to a health condition; the perceived severity of the health condition as well as the perceived benefits and barriers to the action.

Seven trained Research Assistants administered the questionnaire. Respondents were allowed to fill the questionnaire in the language of their proficiency while those who could not read or write in English or Yoruba were allowed to provide their answers to the trained Research Assistants who thereafter filled such answers on the questionnaire form. A total of 2200 copies of the questionnaire were distributed to respondents but only 2120 were retrieved; indicating a 96.3% return rate.

Data for the Focus Group Discussion were collected using a digital tape recorder by the Researcher. The use of a digital tape meant the tape could run on its own while the researcher observed and took notes of the participation. The Focus Group Discussions took place at the Primary Health Centres in the selected communities. The discussions were conducted in Yoruba language and later transcribed and translated into English language for analysis. Participants in the FGD and respondents to the survey questions were not made to disclose their names as part of measures at enhancing confidentiality and freedom in responding to questions.

## 8. Secondary data collection

The study accessed secondary data made up of six radio jingles on malaria prevention; one RBM Malaria IPC Guide; one Interpersonal Communication Flip Chart for Malaria Control in the Community and three generic posters; “Net Safe”; “Take Good Care of Your Long Lasting Nets”; and “Disease Prevention”. These data were expected to be available to people in the study area as at the time of the investigation. Five of the radio jingles were produced by MAPS/Oyo State Government/RBM; while the sixth was produced by Osun State/RBM. In terms of their themes; the six jingles focused on the use of LLN and general malaria prevention. Four of the jingles were in Yoruba while the remaining two were in Pidgin English.

### 8.1. RBM malaria IPC guide

The RBM Malaria IPC Guide was produced by Roll Back Malaria; Federal Government of Nigeria and Society for Family Health. It is a 26-page document printed in full digital colours. There is a "message page"; where the written message is displayed and an additional "illustration page" with a pictorial representation of the message. Each message page has the headline of the message in bold; black letters while additional points are written in smaller letters. The illustrations are hand drawn pictures. Page 1 is on "What is Malaria"; page 2 "Myths and Misconceptions" page 3 "Special groups at risk"; page 4 "Symptoms of malaria"; page 5 "Effects of Malaria"; page6 "Malaria in Pregnancy"; page 7 "IPT" page 8 "Integrated Vector Management"; page 9 "Long Lasting Insecticide Treated Nets"; page 10 "Effective malaria treatment"; page 11 "Is it malaria?"; page 12 "Malaria prevention" page 13 "ACTs most effective compared to older medicines like SP and CQ ". There is an additional page on "Management of severe malaria" but while the message page has no page number; the illustration page has the page number "1" as different from the original Page "1" that focuses on "What is Malaria".

### 8.2. Interpersonal communication flip chart for malaria control in the community

Interpersonal Communication Flip Chart for Malaria Control in the Community was another communication materials accessed for the study. It was produced by Centre for Disease Control (CDC); United States Agency for International Development (USAID); President's Malaria Initiative; Federal Government of Nigeria and fhi360 (THE SCIENCE OF IMPROVING LIVES) and was used by MAPS in Oyo state. It is a 24-page document printed in fully digital colours. There is a "message page"; where the written message is displayed and an additional "illustration page" with a pictorial representation of the message. The illustrations are hand drawn pictures. Each page is called CARD. Each CARD has the words IPC Conductor's Guide written boldly on top in bright blue colour. Each CARD contains a written message and a smaller version of the drawing used on the opposite page for illustration. The CARDs have no specific message headlines unlike the RBM IPC Guide.

## 9. Generic posters

a. Net Safe was produced by the United States Agency for International Development (USAID) and NetMark and distributed by Womankind FEI; Malaria Parasites: Africa Fights Back and DELIBIMB MALARIA FOUNDATION. It is printed in full digital colours. The Poster contains the message: "Insecticide Treated Net protects against Malaria; use it always. Be...Net Safe. While "Insecticide Treated

Net protects against Malaria; use it always. Be” is composed in black lower case letters; the slogan “Net Safe” is in light green. The logo of USAID is on the top left hand corner of the poster while the green coloured NetMark logo is on the right hand side. The NetMark logo as well as that of DELIBIMB MALARIA FOUNDATION contains a drawing of a mosquito with a green bold mark stretched across the mosquito. The Poster contains a picture /illustration of a mother sleeping inside a LLIN with her baby. The two appear to be fast asleep. Below the illustration are the logos of the three distributors of the LLIN mentionedearlier. A copy of the poster is attached to this study as annexure.

b. Take Good Care of Your Long Lasting Nets. This Poster was produced by RBM for the states. It is printed in full digital colours. The title is “Take Good Care of Your Long Lasting Nets” written in bold white letters reversed on black with the tag line; “They will protect you from Malaria” written in black below the picture used to illustrate the headline. The title is on the left hand side. A picture of a mosquito over which a ‘stop-sign’ in red was drawn; is on the right hand side of the poster. Beneath the headline and mosquito are the pictures of a woman holding a blue coloured net on her right hand and a white coloured net on the right hand. The poster also contains a small picture of a woman and her baby. The picture of the second woman is however faint while her baby is in bright white underwear. The first woman holding the net is dressed in what looks like Igbo apparel. It is however not clear if they are sleeping under a mosquito net. Across the tag line is a miniature drawing of two people sleeping inside a net while the words “Take Cover from Mosquitoes that spread malaria Sleep inside the NET” are written in a circle around the miniature drawing. The miniature illustration is marked positive in green colour. The Roll Back Malaria logo is printed at the bottom of the poster while the logo of Osun state and the Nigerian coat of arms are on the right hand side. There is also information on where readers can get more information on the subject matter of the poster. A copy of the poster is attached to this study as annexure.

c. Disease Prevention. This Poster was produced by the Ministry of Health; Osun state through Osun State Health Systems Development Project 11. The logo of Osun state is on the left hand side while the Nigerian Coat of Arms is on the right. The poster is printed in full digital colours. The Poster is an instructional material for health personnel providing information on malaria prevention to their audience. The headline is “Disease Prevention” written in bold red colourswith the tag line “Child sleep under Insecticide Treated Net (ITN)” written in black colours. Under the headline is a hand drawing showing a figure sleeping inside what looks like a net. A smaller size of the same drawing is repeated at the lower right hand corner of the poster and illustrated with the words “The picture shows a person asleep on a mattress around which ITN has been well tucked in.” The poster contains four “Important Questions to Ask Caregivers” as follows: (1) What do you see in the picture? (Let the caregiver/group discuss); (2) What are the gains of sleeping under an insecticide treated net; (3) Do adults and children in the community sleep under ITN? (Probe the reasons why or why not); (4) Are there places one can buy and retreat ITNs in this community? (Discuss where to get ITNs and how to take care of them).

The Poster also contains a two–paragraph "Introduction" on malaria and how to prevent it as well as three "Notes for CORPs on the "Benefits of Using ITN" "For Maximum protection" and "Ensure you identify and retreat your net every 6 months at the nearest treatment centre". Five "Benefits of Using ITN" are provided in bullet points. They are; "Reduces man-mosquito contact thereby helping people sleep well/stopping transmission"; "Effective against other insects including bedbugs; cockroaches and lies"; "Promotes growth and development of children"; "ITN costs less than treating malaria" and "Use of ITN reduces sickness and death in children by reducing occurrence and severity of malaria". This last benefit is printed in bold black colour; Under "For Maximum Protection"; the poster contains the following points: "Have your mosquito nets re-dipped in insecticide every six months"; "Buy mosquito nets from reputable dealers" and "Ensure that all children under five years in your household sleep under ITN". A copy of the poster has been attached to this study as annexure.

## 10. Ethical consideration

The study received approval from the Ethical Boards of the Ministries of Health in Oyo and Osun states.

## 11. Data analysis

Data from the survey was analysed using simple percentages; Friedman non-parametric test and Pearson correlation. Voice notes from FGD participants were first translated into English language and thereafter analysed qualitatively by a team of panelists using the explanation building and thematic approaches to bring out their salient points relative to the objectives of the study. Each of the FGD participant was identified by a numerical number along with the name of their respective community; for ease of reference during analysis. Data in **Table 1** indicates that respondents with NCE/OND were in the majority (33.0%).

## 12. Results and discussion

The demographic breakdown also indicates that youths constituted the highest bracket of the respondents with a combined total of 70.5%. The data also indicates more female respondents (61.0%) than males (39.0%). In **Table 2**, the data indicates that while 54.2 of the respondents were married, 11.0% identified as single parents while 9.9% were divorcees. Also, the population of Christians among the respondents was 51.6% compared with Muslims (36.9%). The majority of the respondents were civil servants (30.8%), followed by traders (25.0%) (**Tables 1** and **2**).

**Table 1.** Educational; age and gender background of respondents.

| Educational level | | Age | | Gender | |
|---|---|---|---|---|---|
| No education | 165 (7.8%) | 20–30 | 815 (38.4%) | Male | 826 (39.0%) |
| Primary School | 234 (11.0%) | 31–40 | 680 (32.1%) | Female | 1294 (61.0%) |
| Secondary School | 480 (22.6) | 41–50 | 352 (16.6%) | Total | 2120 (100%) |

**Table 1.** (*Continued*).

| Educational level | | Age | | Gender | |
|---|---|---|---|---|---|
| NCE/OND | 698 (33.0%) | 51–60 | 167 (7.9%) | | |
| HND/BSC/B.A | 449 (21.2%) | 60–above | 106 (5.0%) | | |
| Others | 94 (4.4%) | Total | 2120 (100%) | | |
| Total | 2120 (100%) | | | | |

**Table 2.** Marital status; number of children; religion and occupation of respondents.

| Marital status | | No of children | | Religion | | Occupation | |
|---|---|---|---|---|---|---|---|
| Married | 1150 (54.2%) | 1 | 700 (33.0%) | Christians | 1094 (51.6%) | Civil servants | 650 (30.8%) |
| Single parents | 233 (11.0%) | 2 | 172 (8.2%) | Muslims | 783 (36.9%) | Artisans | 235 (11.1%) |
| Divorced/separated | 209 (9.9%) | 3 | 328 (15.5%) | Traditionalists | 214 (10.1%) | Farmers | 258 (12. 2%) |
| Not married | 528 (24.9%) | 4 | 361 (17.0% | Others | 29 (1.4%) | Traders | 529 (25.0%) |
| Total | 2120 (100%) | 5 | 315 (14.9%) | Total | 2120 (100%) | Others | 441 (20.8%) |
| | | 6 | 244 (11.5%) | | | Total | 2120 (100%) |

## 13. Understanding of malaria prevention information among respondents and FGD participants

We investigated the exposure of respondents to the available communication materials on malaria prevention as mentioned in the two states over a period of twelve months prior to the study. Respondents could not identify the specific jingles but could recollect the thematic focus of available jingles in their state. This was accepted particularly where the thematic focus aligned with two key Roll Back Malaria messages; that is; use of ITNs/LLINs and living in a clean environment. Using this yardstick; the 'jingles' with the highest frequency of recall by respondents were the ones that taught the audience about the use of ITNs/LLINs. Five of the radio jingles collected from MAPS (Oyo state) and Osun State Malaria Programme Office focused on the use of LLIN. Also; the jingle from Osun state focused on living in a clean environment; the use of LLIN as preventive measures against the deadly malaria and visit to the clinic for those already down with the disease. The results are presented in **Figures 3** and **4**.

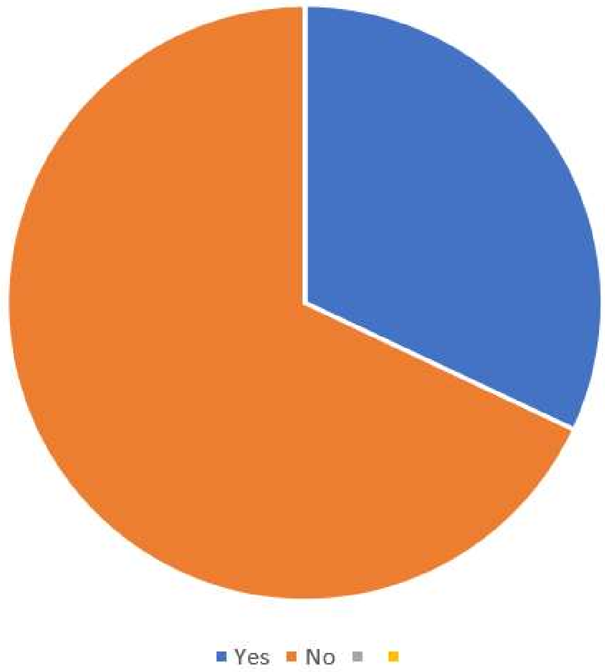


**Figure 3.** Recall of Malaria prevention jingles among respondents.

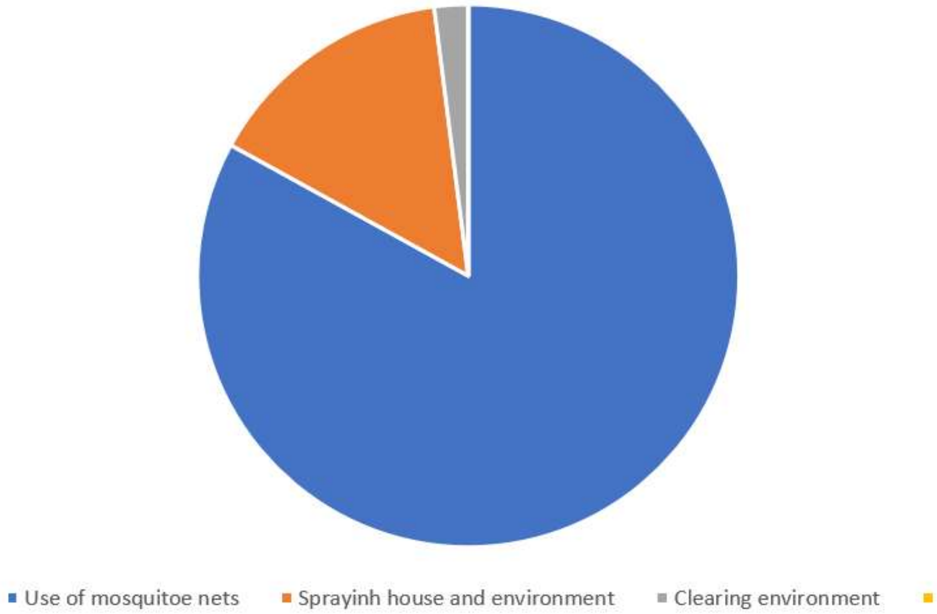


**Figure 4.** Types of jingles recalled among respondents.

In similar vein; it was observed that even when played to their hearing; most FGD participants in Osun state could not recall the jingle produced by the state's Ministry of Health and Malaria Programme Office. However; in majority of the sessions FGD participants in Oyo state indicated they had heard three of the jingles; 'Apo Apefon'; 'Baba Kemi' and 'Make Una Listen'. From observations during the sessions; 'Baba Kemi' had the highest rate of recall among the FGD participants. The limited recall could be linked to the fact that the jingles had stopped running on the various radio stations in the states due to financial constraints faced by the sponsors. Thus; although radio was a major source of information to most respondents the jingles on malaria prevention that were supposed to spur them into taking preventive measures against malaria were no longer running on radio stations and therefore; they could not recall most of them during the study. This finding implies that withdrawing malaria preventive messages from the public when the expected behaviour change has not been imbibed is counterproductive.

This finding aligns with similar outcome from Ojebode [21] indicating that crafting a behaviour change messages is not enough. The audience must have the infrastructure to handle the recommended actions from the message to become effective. The finding also supports the constructs of the Health Belief Model as non-exposure to relevant information on the threat of malaria would reduce the level of action that an individual can take to prevent themselves from the disease.

The exposure of FGD participants to RBM IPC GUIDE; MAPS Inter-Personal Communication Flip Chart for Malaria Control in the Community as well as the three generic posters was also investigated in this study. Forty-four (92.0%) of the FGD participants in Osun state reported not to have seen the RBM IPC GUIDE when it was shown to them. Similarly; 40 (83.0%) of FGD participants in Oyo state reported not to have seen the MAPS Inter-Personal Communication Flip Chart for Malaria Control in the Community when it was shown to them during the sessions. For the generic posters; 82 (85.4%) of the 96 FGD participants in the two states; reported not to have seen the poster titled “NetSafe”; 56 (58.3%) reported not to have seen the one titled “Take Good Care of Your Long-Lasting Net” and 69 (72.0%) claimed not to have seen the poster titled “Disease Prevention”.

One probable cause for the low level of exposure to the documents was that the Community Volunteers engaged to use them were not doing as expected. This challenge arose probably because since the documents were designed in the English Language; the volunteers did not make them directly available to the rural audience. Instead; they merely read the documents written in English and then disseminated the information in the local language. Laninhun and Oyeleye [2] pointed out this challenge in the production of IEC materials on malaria prevention and recommended that community members should be involved in such production.

This study went further to establish the level of understanding of respondents about the symptoms of malaria. An accurate understanding or knowledge of signs and symptoms of malaria would enable respondents to take the right steps towards proper treatment of the disease. Part of the contents of the malaria prevention information provided by RBM and Other Partners in the zone focused on understanding the signs and symptoms of malaria. Respondents as well as FGD participants in this study were therefore asked to mention five symptoms of malaria known to them.

**Figure 5** reveals that respondents identified 12 symptoms of malaria. From the result; headache was the most common symptom identified by respondents; followed by fever; cold; vomiting; and body pain. During the FGD sessions participants also identified most of the symptoms of malaria. ‘Fever’ headache’ and body pain’ were the most frequently mentioned by FGD participants. These and the other symptoms mentioned in the survey; with the exception of insomnia; were also highlighted in MAPS Inter-Personal Communication Flip Chart for Malaria in the Community and RBM IPC GUIDE. Thus; it can be deduced that survey respondents and FGD participants had a good understanding of the signs and symptoms of malaria. This finding aligns with similar findings by Muhammed et al. [11] among Hausa married men in Mokola community of Ibadan; Oyo sate. However; the finding here indicates the need for a review of the process employed by MAPS and ACCOMIN in communicating their malaria prevention information which currently makes it difficult for the rural dwellers to actually see and read the malaria prevention information provided in their respective Inter-Personal Communication Flip Charts for Malaria prevention.

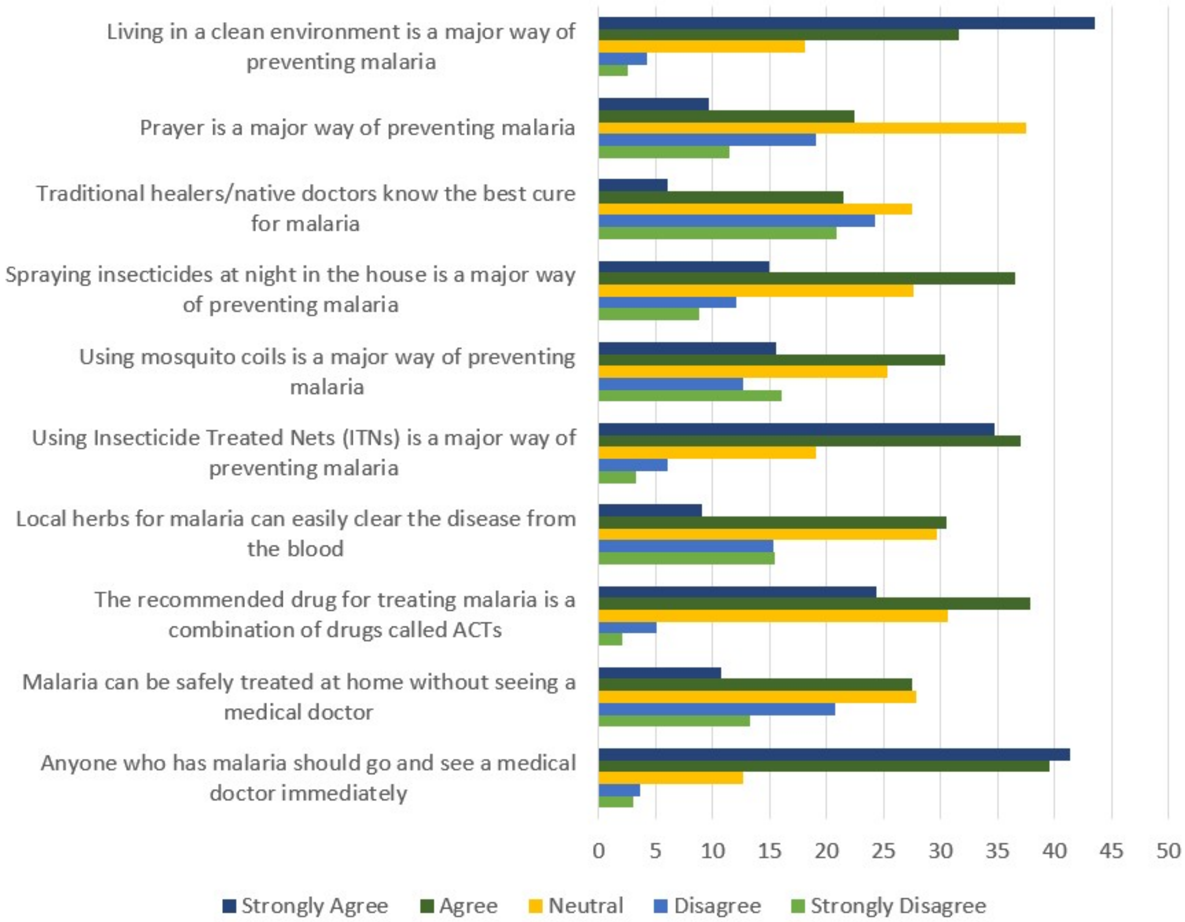


**Figure 5.** Level of understanding of malaria prevention and treatment among respondents.

We also investigated their level of understanding of the prevention and treatment of malaria as provided by RBM and Partners by asking them to indicate their level of agreement or disagreement with 10 statements on treatment. FGD participants were asked if they knew about ACT Therapy; if they understood what it meant and for those who said they understood; if they had been using it to treat malaria. The FGD participants were also asked if they understood the process of malaria treatment for pregnant women. The result is presented in **Figure 5**.

A Friedman test to evaluate the equality of mean scores of different ways to prevent and treat malaria as indicated by the respondents indicated significant differences in the knowledge of respondents about the different ways of preventing malaria (Chi square = 3730.708; df = 9; $p$ = 0.000). However; one major observation from the FGD sessions on the level of understanding of malaria prevention was that in most cases; participants were not familiar with the term ACT and thus would deny ever knowing or having heard about the 'drug' but soon after explanation of the term by the facilitator; most of them would chorus they had been using it. Thus; it could be deduced that respondents and FGD participants; knew about the use of ACTs as the recommended medicine for treating malaria but that their literacy level did not make them to understand the term ACT at first mention.

However; 39.6% of survey respondents still believed that local herbs could easily clear malaria from the human blood. This wrong perception about the treatment of malaria was also prominent among FGD participants in the study and confirms previous studies by Duodu et al. [14] which indicate disparity in perception about malaria between urban and rural dwellers in Nigeria. It is also the point at which culture and religion conflict with biomedical explanations for the cause and treatment of malaria; and in the development of malaria prevention information. While some participants agreed that visiting the clinic is a good step; several others expressed belief in the use of traditional means; particularly local herbs to treat malaria. For instance; a nursing mother at Akinmorin (AKIN4) said with all boldness during the session: once you notice you are feeling like having malaria;just as our forefathers have taught us; you enter into the bush; gather some herbs boil and drink and youwill sweat it out.

Another participant at AbayaOje (ABA3) said: there are two ways to treat malaria in my own understanding because those of us in the village; the old men will ask us to first try herbs andwhen we have done that for some days without result that is when we come here(clinic) and they will treat us.

These findings indicate that while respondents knew about the use of ITN to prevent malaria and the use of ACT for the treatment of the disease; a significant number still believed however that local herbs could be effective in treating the disease. This could be the result of fear or mistrust in western medicine as found in the study by Portugaliza et al. [16]. The finding also confirms previous studies by Okwa and Ibidapo [10]; Abiodun and Ilori [15] on the existence of a variety of beliefs about the cause and transmission of malaria which have negative impacts on activities to control the disease. It could also be the outcome of the promotion of alternative medical practices in Nigeria that has led to a renaissance of reliance on local treatment for many diseases. This type of misconception however could hinder the adoption of safe treatment behaviour among respondents and worsen the malaria situation as evident in the concerns expressed by the WHO (2023) on the increase in cases of malaria in the African Region after the COVID-19 pandemic.

## 14. Perception about causes and treatment of malaria

Respondents were asked to indicate their level of agreement or disagreement with 12 statements that covered perceived causes and treatments of malaria. The result is presented in **Figure 6**.

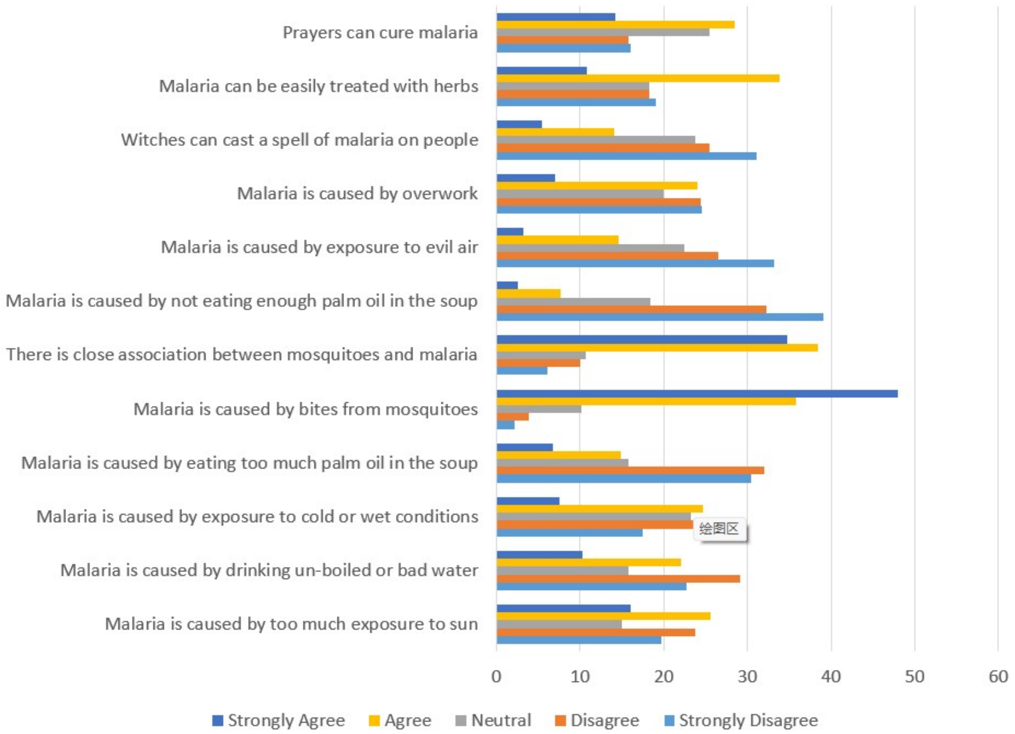


**Figure 6.** Respondents' perception of causes and treatment of malaria.

Friedman nonparametric test of the responses to the 12 statements indicated significant differences in the perception of survey respondents (Chi-Square = 5402; *p*-value =0.000). Responses from the FGD also indicated that while many participants understood the close link between mosquito bites and malaria; the majority nevertheless still attributed the disease to other non-orthodox factors. These include "staying under the sun for long"; "insufficient palm oil intake"; "attack by witches"; "dirty environment"; "exposure to evil air"; "working too long in the farm" and "bed bugs". For instance; according to an FGD participant (Akinmorin 1); someone can have malaria by inhaling a lot of dust during the dry season or while travelling on rural roads that are mostly untarred. Such line of thinking was supported by other participants such as a female trader (Iresaadu 5) and two farmers; (IdoOsun3;) and (Araromi1). Arowomole 4; a retired teacher also from Oyo East local government area of Oyo state; added another dimension to the misconception when he said: although mosquito is the prime cause of malaria; I still believe that malaria is also present in the air; may God no allow us to collide with evil.

These results therefore indicate that a significant percentage of rural dwellers in South-west Nigeria still have a wrong perception about the cause of malaria. This finding aligns with previous studies such as Portugaliza et al. [16]; Duodu et al. [14]. The implication of this finding is on the adoption of preventive measures by rural dwellers; underscoring the need for more effective communication that will address the misconceptions if the battle against malaria would be won in the mind of rural dwellers. The existence of a significant percentage of respondents who still linked the disease with exposure to sun and those who still considered non-orthodox method of treatment as valid should be of concern to developers of prevention messages as stakeholders strive towards achieving SDG Goal 3.

## 15. Perception about malaria and the religion matrix

Given the influence of religion in shaping opinions and perception and the finding that many respondents still believed that prayer; a religious exercise; is a major way of preventing malaria; four possible but medically wrong perceptions; "witches can cast spell of malaria on people"; "malaria can be caused by exposure to evil air"; "prayer can cure malaria" and "malaria can be easily treated with herbs" were statistically tested against the religious background of respondents. This became all the more important given the preponderance of FGD participants who also indicated that they believed witches could still cast spell of malaria on people and that prayers is a major weapon for treating malaria. During the FGD sessions; the researcher asked participants to close their eyes and raise their hands (as if in a voting process) whenever the question about witches and prayers were asked. This was done to safeguard their identity and ensure freedom of expression. During the sessions; 45 (47.0%) participants indicated with a raise of hands that they believed witches could cast a spell of malaria on people. Also 74 (77.1%) of the participants indicated they believe that prayers can cure malaria.

The result of the *t*-test on the perception that "witches can cast spell of malaria on people" and religion of respondents indicated a significant difference among survey respondents based on their religious background (Chi-square = 17.889; DF = 8; $p$ = 0.022); The t-test comparing the means confirmed that the differences are significant at F (2; 2070) = 3.264; DF = 2; $p$ = 0.038); thus indicating that there is a strong association between religion of respondents and the perception that links malaria and witchcraft. This confirms similar findings by Okwa and Ibidapo [10]. However; this association is stronger among those who subscribe to 'Other Religions' (mean score=2.53) than those who reported to be Christians (2.31) or Muslims (2.37). The category; 'Other Religions' could refer to atheists; traditional worshipers; or adherents of other religious movements.

The continued existence of this perception; despite the availability of information on malaria that denies any link between the disease and witches is an indication of the strength of the belief among the Yoruba people of South-west Nigeria despite their education; civilisation and exposure to technology. This attitude has been of concern to scholars such as Jayeola-Omoyeni et al. [22]; Prince [23]; Awolalu [24]; Ogungbemi [25] and Bohannan [26].

Yet; religious leaders appear to play insignificant roles in the communication of malaria prevention initiatives in the South-west zone; implying that those who designed the available malaria information for rural dwellers of in the area have not understood the religious views that shape the perception of the people about the disease or incorporated such adequately into the development of prevention information

## 16. Conclusion

Perception is a key behavioural element that communication activities must target to achieve successful malaria preventive measures. However; this study has been able to show there is disconnect between existing malaria prevention information available to rural dwellers in south west of Nigeria; and the perception of the people. This has limited the effectiveness of the communication activities; especially the use of Information; Education and Communication (IEC) materials on malaria prevention. The study has shown the continued prevalence of some wrong perception about malaria despite the availability of preventive information to the rural communities in Oyo and Osun states of Nigeria. The disconnect has been brought about by lack of continuity in communication activities; language barriers inherent in the information brochure as well as cultural factors that still promote wrong perception that exposure to sun can cause the disease and that witches can cast it on their victims. Therefore; in the design of malaria prevention information; attention must be given to the perception of the people about malaria and the cultural factors that promote such perception. Such communication materials must also be produced in languages accessible to the populace. Particular attention must be given to elaborating on the causes and treatment of malaria. This will help in accelerating the achievement of the SDG Goal 3 of ensuring healthy lives and promoting well-being for all at all ages; among others.

## 17. Recommendations

Based on the outcome of this study; the following suggestions are made as recommendations for policy makers and practitioners:

1) Stakeholders in the fight against malaria should devote more resources to communication activities on the disease. Governments in south-west Nigeria should direct their broadcast stations to air malaria prevention jingles regularly as a part of social service.
2) Producers of malaria prevention information should focus more on correcting the misconceptions about the disease; especially with reference to its being transmitted by witches; among the rural populace more aggressively and systematically.
3) Producers of malaria prevention information should be conscious about the attitude of rural audience to the language; models and illustrations used in the production of communication materials for use among rural people.
4) RBM and other Partners should endeavour to produce enough copies of their respective interpersonal communication flip charts on malaria prevention and more importantly; such materials should be translated into local languages to enhance better access among rural people.

**Ethical approval:** The study was conducted in accordance with the Declaration of Helsinki, and approved by the Osun State Health Research Ethics Committee; Osogbo; Osun state (OSHREC/PRS/569T/42) and Oyo State Research Ethical Review Committee; Ibadan; (AD/13/479/871). Informed consent was obtained from all subjects involved in the study.

**Availability of data and materials:** The datasets used and/or analysed during the current study are available from the author on reasonable request.

**Conflict of interest:** The author declares no conflict of interest.

## References

1. World Health Organisation (WHO). Malaria Report 2010. Geneva. World Health Organization; 2010.
2. Laninhun BA, Oyeleye SA. Assessing the suitability of print IEC materials used in malaria prevention among rural dwellers in South-West Nigeria. Journal of Communication and Media Research. 2021; 13(1): 110–120.
3. WHO Regional Office for Africa. Report on malaria in Nigeria 2022. WHO Regional Office for Africa; 2023.
4. Oyeleye SA. Diffusion of Innovations and Utilisation of Malaria Prevention Information among rural population in Nigeria Journal of Public and Environmental Health. 2023; 1(1): 001-015. doi: 10.5281/zenodo.7581202
5. Aberese-Ako M; Magnussen P, Ampofo GD, et al. Health system; socio-cultural; economic; environmental and individual factors influencing bed net use in the prevention of malaria in pregnancy in two Ghanaian regions. Mal J. 2019; 18: 363. doi: 10.1186/s12936-019-2994-5; 2019
6. Jones COH, Williams HA. The social burden of malaria: what are we measuring? The Am J Tro Med&Hyg. 2004; 71(2): 156-161. doi: 10.4269/ajtmh.2004.71.156
7. Heggenhougen HK, Hackethal V, Vivek P. UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases. The behavioural and social aspect of malaria and its control: an introduction and annotate bibliography. Geneva: World Health Organisation; 2003.
8. Morenikeji OA. Perception and management of Malaria in secondary schools in a Nigerian City. Pak J Med Sci. 2009; 25(3): 508-511.
9. Okeke TA, Okafor HU. Perception and treatment seeking behaviour for malaria in rural Nigeria: implications for control. J. Hum. Ecol. 2008; 24(3): 215-222.
10. Okwa OO, Ibidapo AC. The malaria situation; perception of cause and treatment in a Nigerian University. J Med& Med Sc. 2010; 1(6): 213-222.
11. Muhammad H, Oyewole OE, Dipeolu IO. Knowledge and Perception of Malaria Among Hausa Married Men in Mokola Community of Ibadan; Oyo State; Nigeria. European Journal of Environment and Public Health. 2021; 5(2): em0085.
12. Omole VN, Ogboi SJ, Agu P, et al. Perceptions of Malaria and the Utilisation of Long Lasting Insecticide Treated Nets in a Rural Niger Delta Community in Nigeria. Kanem J Med Sci. 2018; 12(2): 64-72.
13. Andrada A, Herrera S, Inyang U, et al. Subnational profiling analysis reveals regional differences as the main predictor of ITN ownership and use in Nigeria. Mal J. 2019; 18: 185.
14. Duodu PA, Dzomeku VM, Emerole CO, et al. Rural–urban dimensions of the perception of malaria severity and practice of malaria preventive measures: insight from the 2018 Nigeria Demographic and Health Survey. Journal of Biosocial Science. 2022; 54(5): 858–875. doi:10.1017/S0021932021000420 2022
15. Abiodun MT, Ilori OR. Caregivers' perception and determinants of delayed presentation of children with severe malaria in an emergency room in Benin City; Nigeria. Niger Postgrad Med J. 2022; 29:198-205.
16. Portugaliza HP, Galatas B, Nhantumbo H, et al. Examining community perceptions of malaria to inform elimination efforts in Southern Mozambique: a qualitative study. Malar J. 2019; 18: 232. doi: 10.1186/s12936-019-2867-y
17. Murta FLG, Marques LLG, Santos APC, et al. Perceptions about malaria among Brazilian gold miners in an Amazonian border area: perspectives for malaria elimination strategies. Malar J. 2021; 20: 286.
18. Ezediuno F. Osun making steady progress in malaria control – Programme Officer. Available online: https://dailypost.ng/2023/04/29/osun-making-steady-progress-in-malaria-control-programme-officer/ (accessed on 10 May 2024).
19. The Punch. Mortein; Ogun State; Federal Govt Join 'Fight To End Malaria. Available online: https://punchng.com/mortein-ogun-state-federal-govt-join-fight-to-end-malaria/ (accessed on 10 May 2024).
20. Adewole AI, Amurawaye FF, Oladipupo JO. Time series analysis of malaria fever prevalence in Ogun State. TASUED Journal of Pure and Applied Sciences. 2023; 2(1): 201-211.
21. Ojebode A. Tested; trusted; yet frustrating: an investigation into the effectiveness of environmental radio jingles in Oyo State Nigeria. Applied Environmental Education and Communication. 2005; 4: 173–180.
22. Jaiyeola-Omoyeni MS, Oyetade EM, Omoyeni JO. Witchcraft in the 20th and 21st centuries in Nigeria: an analysis. European Scientific Journal. 2015; 11(28): 1857–7881.
23. Prince R. The Yoruba Image of the Witch. J Mental Sci. 1961; 107(449): 795-805. doi: 10.1192/bjp.107.449.795
24. Awolalu JO. Yoruba Beliefs and Sacrificial Rites. London: Longman; 1979.

25. Ogungbemi S. A philosophical view on witchcraft in Africa. Journal of Humanities. 1992; 6: 1-16.
26. Bohannan P. African and Africans. Garden City: American Museum of Science Books; 1964.

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Review

# Reconciling patent rights and the human right to access to essential medicines: A critical review

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**Abstract:** Over 80% of the world's population lives in developing nations, with limited access to medicines like AIDS and malaria. Competition between patented and generic medications can improve access and lower prices, but counterfeit medicines should be avoided. The Doha Declaration, released at the World Trade Organisation Ministerial Conference in 2001, aims to support nations' rights to safeguard public health and encourage access to medicines. It aims to influence the interpretation and application of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) in a manner that is health-friendly, considering the responsibility of nations to uphold health rights under international law. The Declaration calls for developed nations to encourage practical solutions for poor people in developing countries, emphasizing that trade agreements should be secondary to defending human rights and achieving the best quality of health for all. International human rights treaties protect the universal human right to health, but rigid trade agreements on patents can hinder affordable medication for low-income populations in developing nations. TRIPS, a treaty that protects intellectual property rights and promotes technological innovation, aims to provide inexpensive medications for HIV/AIDS patients through exclusions from patent admissibility, exceptions, parallel importing, and compulsory licensing.

**Keywords:** essential medicines; access; right to health; patent rights; human right

## 1. Introduction

Over eighty percent of people on the planet reside in developing nations, the majority of whom have little to no access to the medicines that have saved and prolonged the lives of people in wealthier, industrialized nations. Twenty million individuals have already passed away from AIDS in the poor countries, which is home to 95 percent of the 40 million human beings living with HIV/AIDS. More than 8000 individuals perish every day, and 15,000 more are HIV-positive. Entire nations and regions are being devastated by the worldwide epidemic. Similar to TB, malaria kills many people and disproportionately affects the world's poorest and most vulnerable people due to their exceedingly low access to efficient kinds of treatment [1].

Conditions will be set up to favor more or less competition between producers of patented and generic medications, depending on the applicable patent laws (definitions of these terms are provided below). Lower prices are a proven outcome of more competition, and hence improvement in access to medications. Although there are several factors that affect access, the elevated cost of medications is a significant hurdle that cannot be fully and sustainably overcome by foreign aid and medicine contributions alone [2].

Only the patent holder is permitted to manufacture, use, import/export, or sell a medicine that has been patented. A patented drug is typically marketed under a brand name that is exclusively reserved for its owner, i.e., the person or business that was given a patent on that innovation, as per the WHO's Action Programme on Essential Drugs. A generic medicine is a pharmaceutical item that is typically manufactured to replace the original copyrighted drug since it accomplishes identical goal ("bioequivalent"). A generic medication is typically produced and commercialised after the patentee's ownership of the patent expires, unless an earlier arrangement with the patent owner exists [3].

Instead of using a proprietary or brand name, a generic medicine is sold under a non-proprietary or authorized name. Drugs that are generic should not be confused with those that are fake. "Generally speaking, counterfeit items are those that involve the slavish imitation of trademarks. A counterfeit medicine is one that has been purposefully and fraudulently mislabeled with regard to identification and/or source, according to the WHO. Both branded and generic products can be the subject of counterfeiting, and these goods may have the right ingredients, the wrong ingredients, no active substances, the wrong amount of active ingredients, or phony packaging.

The primary aim of this article is to discuss the potential of striking a balance between intellectual property rights for manufacturers of medicines and the human right to health of individual in terms of having access to essential and life-saving medicines. Given that from both perspectives there are critical interests to be taken into account, a human rights-based approach to access to essential medicines, especially in terms of prices, is essential. This article therefore, firstly, provides an overview on the legal framework government patent and related intellectual property rights implications. This is done on the basis of the Agreement on Trade-Related Aspects of Intellectual Property Rights. Secondly, the nexus between property rights and the right to health is then discussed by focusing on the legal framework on the right to health at the international level and particularly regarding access to medicines that are considered as essential or life-saving. Thirdly, a balance between economic rights of producers through patent and the right to health of human beings is discussed through the lens of the Doha Declaration. In terms of methodology, the article adopted a doctrinal legal approach which is characterised by the study and analysis of legal rules on the subject matter from a qualitative perspective.

## 2. Brief literature review

Hoen has discussed the importance of the Doha Declaration in striking the balance between pharmaceutical patents and access to essential medicines. She has argued that the Doha Declaration emphasises public health and healthcare access in TRIPS implementation, allowing countries to regulate intellectual property protection. However, inefficient funding for research and development for neglected diseases remains a concern. To address this, additional international mechanisms such as burden sharing or compulsory medical research are needed [4]. Zainol et al. have argued that the World Trade Organisation's TRIPS agreement has sparked debates about the impact of intellectual property rights on public access to essential medicines in sub-Saharan Africa. It is argued that patents will diminish access, while others are of the view that the protection of patent has the potential to enhance the development of the pharmaceutical industry. Their research found that, in a combined manner, factors related to both patent and non-patent issues may come together to inhibit access. Sub-Saharan African countries should review their policies related to taxation and tariffs, improve infrastructure, strengthen healthcare systems, and ensure IP systems support public healthcare needs [5].

Delgado has focused on the patent system's legitimacy in the pharmaceutical field is defended, but opined that criticism remains. He argued that historically, mechanisms for balancing patent law with health access rights have been weak. In the COVID-19 pandemic, there is a greater desire to prioritise health over patent property rights, as access to healthcare is crucial for all countries [6]. Focusing on access to essential medicines as a fundamental human right, Hunt and Khosla have argued that the UN Committee on Economic, Social and Cultural Rights developed a framework in 2000 to define the right to health, including freedoms, entitlements, healthcare, non-discrimination, participation, and monitoring. This framework is applied to medicines, a health issue outlined in the Millennium Development Goals. The right to health contributes to improving access to medicines, enhancing analysis of causes and responsibilities, and promoting equitable, sustainable, and effective policies. Traditional human rights techniques, such as "naming and shaming," continue to play a crucial role [7].

## 3. Understanding the legal framework on patent

An "intellectual property right" in an innovation is a patent. Intellectual property rights (IPRs) are privileges accorded to an individual or a firm over works of the mind, such as a writer's copyright in a book or a musician's recording rights, a business's distinctive brand on its goods, or a patent on a technological discovery. An innovation can only be made, used, imported, or sold by the person who has the patent (the "patentee"). To put it another way, a monopoly is granted by patent to the holder for the invention. Typically, a patent is given for a set period of time, like 20 years [8].

The domestic laws of a nation, which may be impacted by international rules, govern the granting of patents. Depending on the law of the country in question, a patent may have restrictions or exceptions. A new method of producing a product is also a type of patented invention. A novel invention must meet three requirements in order to be eligible for a patent: it has to be original; it should not be apparent or obvious but rather constitute a "inventive step"; and it has to be practical to use. Drugs used for treating illness are patentable inventions.

The Agreement on Trade-Related Aspects of Intellectual Property Rights is also informally called the TRIPS. The World Trade Organization (WTO) is in charge of enforcing a series of agreements in relation to trade, including the TRIPS Agreement. It lays out guidelines for intellectual property rights that all WTO members' countries must incorporate into their own domestic legislation. A number of standards in the TRIPS Agreement must be met by WTO members in their domestic legislation. Prior to the TRIPS Agreement, the majority of industrialized nations issued drug patents, but a significant number of developing countries did not. In some instances, nations only granted patents for the method of making an invention (such as the method of making a medicine) rather than the finished good (the drug itself) [9].

Because pharmaceutical items could not be protected in some countries, generic versions of these medications might be produced or imported into those nations without first obtaining consent from a patent holder. This meant that because generic pharmaceuticals competed with patented ones for market share, drug prices were frequently lower. This is ended by the TRIPS Agreement.

There is the requirement that governments recognize patents on goods and processes in (nearly) all disciplines of technology under the TRIPS Agreement (Article 28), and to provide the patent holder the exclusive right to create, use, sell, or import the good in their nation for a specific amount of time. (A patent holder may decide to grant the right to do these activities to another person or business. A "voluntary license" is the name given to this authority.) According to Article 33 of the WTO Agreement, all members must now grant patents on inventions in the pharmaceutical sector for a minimum of 20 years after the patent application date. A drug cannot be manufactured, used, sold, or imported by anyone other than the patent holder while it is still protected by a patent. Because of the monopoly of the patent holder, patented drugs are frequently much more expensive than they would be in a competitive market.

States have to make patents as well as patent rights accessible "without discrimination" on specific grounds, according to Article 27 of the TRIPS Agreement. TRIPS prohibits nations from treating domestic and foreign inventions differently. Others contend that nations are not permitted to discriminate between different product categories (e.g., by setting different regulations for computers versus medications). Finally, TRIPS states that national patent laws cannot make distinctions between imported goods and domestically produced goods. The TRIPS Agreement applies to all WTO members' countries. By 1 January 1996, all "developed" nations had to amend their domestic legislation to comply with TRIPS regulations. "Developing" nations have until 1 January 2000 to comply, but if they hadn't already done so, they have until 2005 for pharmaceutical product patents. The "least developed" nations have until 1 January 2006, and they are allowed to request extensions, to modify their laws.

Other nations may bring a country before a trade tribunal if it disobeys a treaty like TRIPS. The WTO's role includes giving nations a platform to resolve trade disputes. The Dispute Settlement Understanding (DSU), one of the WTO accords, outlines the steps to be taken when a country wants to put in question the laws and practices of another country. A tribunal established under the WTO that finds that a country has violated a trade agreement "shall recommend" that the nation put its laws or policies into compliance and may make suggestions for how to do so. The nation can follow the "recommendations" by altering its legal framework or foreign policy [10].

It can also opt to ignore the verdict and instead provide "satisfactory compensation"—possibly ongoing—to the nation that filed the lawsuit. The complaining nation may ask the WTO for permission to impose trade penalties as reprisal, including in other trade areas, if it does not get adequate compensation.

Defaulting to the WTO How is the WTO structured? The WTO is governed by all of its members, in principle. Government ministers meet at the WTO's Ministerial Conference every two years to debate trade-related topics and establish the agenda for next conferences.

Government diplomatic missions in Geneva carry on their regular operations in between these meetings. The EU, US, Canada and Japan, collectively known as the "Quad," make up the majority of the world's wealthiest and most powerful nations, despite the fact that decisions are theoretically "taken by consensus" among all member nations. To be able to meet their healthcare demands, developing nations have begun to call for more flexibility in the global trading system in recent months.

This was made clear at the most recent Ministerial Conference, which took place in Doha, Qatar, in November 2001. At this meeting, TRIPS and access to medications were major topics. Access to Essential Medicines, International Trade Law, and Patents, May 2002 Until all of the member nations (apart from the ones concerned in the dispute) reject this request to authorize sanctions, 4, it will be accepted. Sanctions are not supposed to be imposed by nations prior to this procedure. The sanctioned nation may request that an arbitrator determine whether the sanctions are just.

## 4. The nexus between TRIPS and health

According to the TRIPS Agreement, patent monopoly rights must be weighed against other significant interests. It claims that encouraging technological innovation and facilitating the transfer and diffusion of technology should be made possible by safeguarding and upholding intellectual property rights. TRIPS's Article 7 states that this should take place "in a manner conducive to social and economic welfare, and to a balance of rights and obligations" and that it should benefit both the producers and the users of technological information. In addition, Article 8 of the TRIPS Agreement lays out some fundamental guidelines for interpretation.

It states that nations "may take measures necessary to protect public health" while drafting their own laws. It also acknowledges that nations may need to take "appropriate measures" to stop patent holders from "abusing" their rights or to stop actions that "unreasonably" impede trade or harm the transfer of technology internationally. However, these actions must be "consistent" with TRIPS's rules. The idea that nations have a right to flexibility in how they fulfill their commitments to protect patent rights is supported by these TRIPS rules [11].

TRIPS contain provisions that nations might utilize to encourage the availability of inexpensive medications for those suffering from HIV/AIDS and other diseases (see below). Additionally, member nations released a Declaration on the TRIPS Agreement and Public Health at the most recent WTO Ministerial Conference in Doha in November 2001, stating that TRIPS "can and should be interpreted and implemented in a manner supportive of WTO Members' rights to protect public health and, in particular, to promote access to medicines for all." The interpretation of the TRIPS Agreement still has some gray areas, nevertheless.

There are still issues with the TRIPS Agreement that have not been resolved, therefore it is unclear whether the Doha Declaration will have any good, tangible effects (see below). To guarantee the most significant flexibility towards the interpretation and implementation of the agreement, advocacy is still required. To ensure that nations can defend their citizens' health and human rights, the Agreement may need to be amended if the required wiggle room cannot be established. While there is a pressing need for access to medications right away, formally revising the agreement's terms might take years and produce unpredictable results.

TRIPS have four primary components that can help nations promote access to inexpensive medications.

Exclusions from patent admissibility:

A nation may refuse to recognize an invention's patent ability if it is "necessary" to do so in order to preserve human life and health (Article 27). It's unclear how to decide whether this is essential and who makes the decision.

Exceptions to patent rights:

According to Article 30, a nation may, while considering the legitimate interests of others, provide in its patent rules "limited exceptions" to a patent owner's rights to prevent others from producing, utilising, selling or importing an invention. These exclusions may not "unreasonably prejudice" the patent owner's legitimate interests and may not "unreasonably conflict with the normal exploitation" of the invention. This article has only been interpreted by the WTO once, in the Generic Medicines issue regarding Canadian patent rules. The TRIPS law was interpreted loosely in that case, favoring more access to reasonably priced generic medications.

Parallel importing:

Drug manufacturers frequently charge less for their products in one nation than in another. This means that importing a patented drug from overseas might sometimes be more affordable for a country with limited resources than buying it at higher costs from the producer at home. Most nations' patent rules provide that the moment a patent holder forsake the rights on its goods, it has no further legal authority over the resale of those same items. In this sense, the patent holder has "exhausted" all of its legal options with respect to the sold good. (The owner of the patent retains the sole authority to create the product, maintaining its monopoly on the "know-how" underlying the innovation).

As a result, a middleman may purchase a patented drug in one state at the manufacturer's lower price and resale it in a different state for less than the manufacturer is asking for its product there. The term "parallel importing" applies here. Nothing in the TRIPS Agreement, according to Article 6, prohibits a nation from allowing parallel imports [12].

Compulsory licensing:

In accordance with TRIPS, a nation's legal framework may allow the state or the courts to provide a "compulsory license," which enables the government, a person, or a business to utilize a drug (i.e., create or import a generic version) without the consent of the patent holder. For reasons of general interest, such as public health, economic development, national defense, and the absence of use (i.e., when the patent holder is not "exploiting" its invention), compulsory licenses are typically issued. The basis on which governments or tribunals may impose compulsory licenses are not restricted by the TRIPS Agreement [13].

Typically, a voluntary license must be attempted to be negotiated with the owner of the patent "on reasonable commercial terms" within a "reasonable period of time." Nevertheless, it's crucial to note that the effort at negotiations and discussion with the patent holder will not be necessary if the drug is being employed for "public non-commercial use," when there is a "national emergency" or other situation of "extreme urgency," or if the patent owner has been found to have engaged in "anti-competitive" practices.

The patent holder has a claim to "adequate remuneration" (i.e., either a nominal fee honoring the inventor or an adequate and appropriate royalty in lieu of financial compensation for loss of sales) if a forced license is granted. Alternatively, the responsible authorities can decide that a license must be given away without fee. The definition of "adequate remuneration" is not specified in the TRIPS Agreement.

Additionally, unless the license is granted to address "anti-competitive" behavior by the patent owner, the license must be "predominantly" utilized to supply the domestic market in the nation providing the license. Given that many developing nations lack the capacity to create their own generic medications, they would have to import them from nations that do. This presents a potential obstacle to receiving affordable medications. However, TRIPS prohibits those nations that do have a generic drug sector from granting a compulsory license allowing someone to produce a patent-protected drug principally for export to other nations. The WTO is now considering solutions to this barrier to the export of high-quality generic medications to nations who want less expensive medications but must import them because they lack the capacity to produce their own.

## 5. The legal framework on the protection of the human right to health

Countries are required by global human rights instruments to take action, individually as well as collectively, to fully implement the universally acknowledged human right to health in addition to their ethics-driven duties to act in the interest of the public. This includes passing legislation to support and advance this right. In order to uphold the right to health, States ought to additionally make sure that this right is taken into account in international agreements (like TRIPS) and that these agreements do not adversely influence the right to health, according to the UN Committee on Economic, Social, and Cultural Rights. Regarding pandemics like HIV/AIDS and COVID-19, the UN Commission on Human Rights has also acknowledged that access to medicine "is one fundamental element" for achieving everyone's right to health [14].

This justification is frequently used to support a 20-year patent protection period for novel items and techniques. However, it is a misleading generalization that ignores complaints that excessively rigid international trade agreements on patents make it difficult for people in developing nations to get affordable medications. The pharmaceutical sector continues to be the most profitable in the world, considerably outpacing businesses in all other industries. The amount required for a "reasonable" return on their R&D is much in excess of current profits. This is especially true when we take into account the fact that pharmaceuticals sold by multinational corporations were frequently created with substantial public funding, including direct government involvement in pharmaceutical research as well as tax advantages for R&D.

Additionally, the income they receive from developing nations is really meager. For instance, despite the fact that millions of people require medications for a variety of diseases, all of Africa only contributes to roughly 1% of worldwide pharmaceutical sales. The drug industry's motivation for R&D will not be significantly impacted by restrictions on or overrides of patents in such nations. In any case, a profit-driven system based on private patent rights encourages only the development of the most lucrative drugs. Diseases that primarily afflict low-income populations, who cannot afford expensive medications, will not be lucrative study areas unless there is a sizable enough rich market to make the research investment viable.

When nations have varying degrees of development or opt for different development routes, a world-wide system of patent with a single set of laws does not function. After achieving a particular level of economic, social, and technological development, the majority of industrialized nations adopted their current patent rules. Because drug patent regulations were flexible (and later changed in late 1987 and 1993 to nearly totally abolish any kind of forced licensing), Canada's own generic drug sector was able to flourish. For poorer nations, which cannot afford the expensive access to technologies including medicines when multinational firms have monopolies on that knowledge, imposing the laws of the industrialized world on all nations will offer an extra hurdle to socioeconomic growth. Patent owners are concentrated primarily in developed nations. Monopolies on such information at a global scale will "lock in" the current inequality [15].

The foundation for the industry's development to where it has reached today, being a leading manufacturer of high-quality generic medications and raw materials, capable of inventing new methods for manufacturing medications through reverse engineering, and able to conduct original research and development—was provided by the patent law of India dating back to 1970, which granted patents to 'process' instead of 'product' for pharmaceuticals. The Indian drug sector has boosted research and development since TRIPS was agreed, but for ailments that are endemic to the West rather than those that are indigenous to India, according to evidence from the Indian pharmaceutical industry. Indian research and development priorities were determined, like those of other market-driven businesses, by the significance of potential markets rather than by medical requirements. India is one of the few developing nations with domestic research and development capacity, thus the example is instructive.

There are numerous ambiguities in TRIPS itself. How flexible the TRIPS Agreement can be interpreted and applied is still a topic of significant debate. There haven't been many instances presented to the WTO that provide unambiguous interpretations, but the ruling in the Generic Medicines dispute (see side box above) is worrying. But whether and how countries can safeguard and encourage access to affordable pharmaceuticals will be greatly impacted by how the TRIPS Agreement is legally read and how it is used in a political sense. Despite some recent positive advances, strong lobbying is still required to promote TRIPS' full flexibility for countries to meet their health needs.

## 6. The importance and relevance of the Doha declaration

At the WTO Ministerial Conference in Doha, Qatar, in November 2001, participating nations released a “Declaration on the TRIPS Agreement and Public Health.” It notes that the TRIPS Agreement “can and should” be construed in a way that supports nations’ rights to safeguard public health and, in particular, to encourage access to medicines for everyone. It further states that the TRIPS Agreement “does not and should not” restrict countries from taking actions to protect public health. An important step forward is represented by the Doha Declaration. The highest body with the power to adopt interpretations of WTO treaties is the Ministerial Conference [16].

The Doha Declaration ought to, therefore, as a question of law, influence the reading of the TRIPS Agreement in an increasingly “health-friendly” direction in any future patent conflicts. These interpretations ought to additionally take into consideration the responsibility that nations have to uphold and advance the human right to health as per international law. The TRIPS Agreement is invoked and trade sanctions are threatened when developing countries restrict exclusive patent rights in order to lower the cost of medicines. This pressure technique may be avoided with the aid of the Doha Declaration which made a promise, but whether it will be fulfilled is still up in the air. The deadline for “least developed countries” to adopt the TRIPS provisions requiring them to award exclusive, patent rights for 20 years to pharmaceutical items was further extended by the Doha Declaration until 2016.

The Doha Declaration recognised an additional limitation that the TRIPS Agreement imposed while arguing for a more health-friendly interpretation of the agreement. As previously mentioned, Article 31(f) mandates that mandatory licenses for the manufacturing of generic medicines be restricted to “predominantly” serving the local market of that nation. This clause limits the ability to give a compulsory license throughout a drug’s 20-year patent period to a corporation that produces generic medications primarily or exclusively for export to poor nations without the infrastructure to do so.

This poses a severe issue because many poor nations are in fact unable to employ protections like compulsory licensing to gain access to affordable generic medications because they lack manufacturing and supply capacity. If there is no solution identified, the full effects can be felt very quickly. Few developing nations with a generic pharmaceutical industry are still partially exempt (until 2005) from the TRIPS obligation to provide exclusive patent rights on medicines, allowing them to continue exporting more affordable, high-quality generic medications.

However, even if the political and business elites in these nations were willing, they still wouldn’t be able to meet the total demand for medicines to treat HIV/AIDS and other ailments in the poor world. Beginning in 2005, they will be governed by Article 31(f) of TRIPS, necessitating the issuance of a compulsory license in order to manufacture generic copies of proprietary medications. Even then, the ability to export generic medications to poor nations in need would be restricted to “predominantly” servicing their domestic market. The Council for TRIPS of the WTO, which is in charge of the agreement, has been given instructions to come up with a “expeditious solution” and submit a report by the end of 2002. A group of non-governmental organizations has proposed ideas that will provide poor nations the most freedom in getting access to good, affordable generic medications. However, some wealthy nations (particularly the US) are making a concerted effort to push "solutions" that are severely constrained, only temporary, and restricted to dealing with "pandemics" or public health "crises". Canada has so far backed any proposal with these tight criteria. Since the TRIPS Agreement does not impose these kinds of limitations on compulsory licensing, it would be unfair to apply them to poor nations who must import pharmaceuticals in order to employ compulsory licensing effectively while other nations do not have to overcome this obstacle.

This goes against the Doha Declaration's ethos, which called for a solution that would enable developing nations to effectively implement compulsory licensing. Developed nations should encourage practical solutions that would best help poor people grappling with HIV/AIDS as well as other life-threatening diseases in developing countries, instead of limiting the use of the restrictions that are already present in the TRIPS Agreement by developing countries [17].

## 7. Conclusion

According to the Doha Declaration, public health commitments and the responsibility to support universal access to medicines take precedence over intellectual property rights. Advocates and activists in the health sector should utilize this to advance the idea that trade agreements are secondary to nations' responsibility to defend and advance human rights, which also includes the attainment of the best attainable quality of health for all. People who are worried about developing countries' access to medicine must make sure that the Doha Declaration's promises are kept in good faith. Advocates need to work towards a resolution that swiftly and fairly addresses the problem of approving the production of generic drugs of high quality meant to be exported to developing nations and that avoids establishing onerous requirements that will hinder access to a wider range of reasonably priced medicines, increasing the number of avoidable deaths. If advocates follow the actions permitted under the TRIPS Agreement to enhance access to essential and life-saving medicines, they must also make sure that the advances reflected in the Doha Declaration are not reversed by political pressure on developing nations. These protections must be included in any regional or bilateral trade agreements that deal with patents, and they should not go beyond TRIPS in bolstering private intellectual rights at the expense of low-income people who require access to medicines.

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## References

1. Birnbaum JK, Murray CJ, Lozano R. Exposing misclassified HIV/AIDS deaths in South Africa. Bulletin of the World Health Organization. 2011; 89(4): 278–285. doi: 10.2471/blt.11.086280
2. Schafheutle EI, Hassell K, Noyce PR. Access to medicines: cost as an influence on the views and behaviour of patients. Health & Social Care in the Community. 2002; 10(3): 187–195. doi: 10.1046/j.1365-2524.2002.00356.x
3. King DR, Kanavos P. Encouraging the use of generic medicines: implications for transition economies. Croatian medical journal. 2002; 43(4): 462–469.

4. Hoen E. TRIPS, pharmaceutical patents, and access to essential medicines: a long way from Seattle to Doha. Chi. J. Int'l L. 2002;3: 27.
5. Zainol ZA, Amin L, Jusoff K, et al. Pharmaceutical patents and access to essential medicines in sub-Saharan Africa. African Journal of Biotechnology. 2011; 10(58): 12376–12388.
6. Ruben BD. Pharmaceutical patents and the right to health—Portugal and Brazil. JANUS NET e-journal of International Relation. 2022; 13(1): 171–189. doi:10.26619/1647-7251.13.1.11
7. Hunt P, Khosla R. Acesso a medicamentos como um direito humano. Sur Revista Internacional de Direitos Humanos. 2008; 5(8):100–121. doi: 10.1590 s1806-64452008000100006
8. Hemphill CS, Sampat BN. When Do Generics Challenge Drug Patents? Journal of Empirical Legal Studies. 2011; 8(4): 613–649. doi: 10.1111/j.1740-1461.2011.01235.x
9. Matthews D. Globalising Intellectual Property Rights: the TRIPS Agreement. Routledge; 2003.
10. Kearns JE, Charnovitz S. Adjudicating Compliance in the WTO: A Review of DSU Article 21.5. Journal of International Economic Law. 2002; 5(2): 331–352. doi: 10.1093/jiel/5.2.331
11. Matthews DN. TRIPS flexibilities and access to medicines in developing countries: The problem with technical assistance and free trade agreements. European Intellectual Property Review; 2005.
12. Maskus KE. Parallel imports in pharmaceuticals: implications for competition and prices in developing countries. Final Report to World Intellectual Property Organization; 2001.
13. Wartini S. The Legal Implication Of Compulsory Licence Pharmaceutical Products In The Trips Agreement To The Protection Of The Right To Health In Developing Countries. Jurnal Dinamika Hukum. 2018; 18(1): 1–11. doi: 10.20884/1.jdh.2018.18.1.1685
14. Vargas-Peláez CM, Rover MRM, Leite SN, et al. Right to health, essential medicines, and lawsuits for access to medicines – A scoping study. Social Science & Medicine. 2014; 121: 48–55. doi: 10.1016/j.socscimed.2014.08.042
15. Kitch EW. The Patent Policy of Developing Countries. UCLA Pacific Basin Law Journal. 1994; 13(1). doi: 10.5070/p8131022068
16. World Health Organization. Implications of the Doha Declaration on the TRIPS Agreement and public health (No. WHO/EDM/PAR/2002.3). World Health Organization; 2002.
17. Beall R, Kuhn R. Trends in Compulsory Licensing of Pharmaceuticals Since the Doha Declaration: A Database Analysis. Ford N, ed. PLoS Medicine. 2012; 9(1): e1001154. doi: 10.1371/journal.pmed.1001154

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Brief Report

# Report on the South Eastern New South Wales Primary Health Network

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**Abstract:** In response to the evolving healthcare challenges in South Eastern New South Wales, this report outlines a strategic framework for enhancing the region's health services. Established under Australia's Primary Health Networks, the South Eastern New South Wales Primary Health Networks aims to address significant health concerns and issues identified including high rates of potentially preventable hospitalisations, increasing chronic conditions, mental health crises, rising substance abuse, and inadequate culturally tailored health services. This report proposes four evidence-based recommendations: shifting chronic condition management to pre-hospital settings, enhancing emergency departments with 24-h mental health coverage, implementing a universal substance use screening tool, and redesigning culturally appropriate services. These recommendations are evaluated based on Duckett and Willcox's criteria for an ideal health system, aiming to improve service efficiency, equity, quality, and acceptability.

**Keywords:** Primary Health Networks; South Eastern New South Wales; chronic conditions; mental health; substance abuse; culturally appropriate services

## 1. Introduction

### 1.1. Preamble

On 1 July 2015, the Australian Government established a healthcare system that is comprised of 31 Primary Health Networks (PHN) located throughout Australia [1]. Each independent PHN was tasked to contextualise and connect different elements of Australia's health system to the population within its region by embracing two key objectives. Firstly, to improve the efficiency and effectiveness of medical services for patients; and secondly to improve the coordination of care to ensure patients receive the right healthcare, in the right location, and at an appropriate time [1]. Attributed to the diversity of each network's population, decision-makers need to ensure any change, innovation, or redesign of the primary healthcare sector reflects the needs of the population-specific to the region. Ideally, these proposed changes should comply with Duckett and Willcox's [2] criteria for an ideal health system ensuring equity of outcomes, quality of care, efficiency, and acceptability for health consumers.

### 1.2. Aim and objective

The aims and objectives of this report are to identify and draw upon the epidemiological and demographic information described in the South Eastern New South Wales Primary Health Network Needs Assessment Report [1]. This information will be utilised as a foundation to support actionable, evidence-based recommendations that aim at improving the capacity of the Australian healthcare system whilst addressing the current health needs of the South Eastern New South Wales population. Furthermore, by focusing on key epidemiological and demographic concerns, this report makes a significant contribution to the ongoing dialogue surrounding healthcare improvement in the region.

## 2. Data and methods

This report draws upon a range of data sources and analytical methods to assess the health needs of the South Eastern New South Wales Primary Health Network region and formulate recommendations for improvement.

### 2.1. Data sources

2020 South Eastern New South Wales Primary Health Network Health Needs Assessment: The foundation of this report is the most recent Health Needs Assessment conducted by the South Eastern New South Wales Primary Health Network. This document provides a detailed analysis of local health data, community consultations, and stakeholder input.

Australian Institute of Health and Welfare Data: National-level data from the AIHW, particularly reports on chronic disease prevalence, hospital utilisation, and health service access, were used to provide context and compare the South Eastern New South Wales region to national averages.

Peer-Reviewed Literature: A review of relevant academic literature was conducted to identify evidence-based interventions and best practices for addressing the identified health priorities. Databases such as PubMed, Scopus, and Google Scholar were utilised.

### 2.2. Methods of analysis

Descriptive Epidemiology: Descriptive statistics were used to analyse demographic and epidemiological data from the South Eastern New South Wales Primary Health Network Health Needs Assessment and the AIHW. This included examining trends in population health indicators, disease prevalence, and service utilisation.

Literature Review and Synthesis: A scoping approach was taken to identify, evaluate, and synthesise findings from relevant research studies and policy documents. This process informed the selection of evidence-based recommendations.

Stakeholder Input: While not directly analysed in this report, it’s important to acknowledge that the South Eastern New South Wales Primary Health Network Health Needs Assessment incorporates significant stakeholder input gathered through community consultations, surveys, and focus groups. These perspectives were essential in shaping the identified priorities.

## 3. Needs assessment summary

This report identifies six priority areas for the South Eastern New South Wales Primary Health Network based on their significance as key epidemiological and demographic concerns. These include potentially preventable hospitalisations; chronic conditions; prevention initiatives; mental health and suicide; drug and alcohol; and culturally appropriate health services.

These areas were chosen due to their high prevalence within the region and their potential for improvement through targeted interventions. While other health concerns exist, these six areas were prioritised because of their significant impact on the overall health and well-being of the region's population. For example, while oral health is important, it was not selected for in-depth analysis in this report due to the focused scope of the South Eastern New South Wales Primary Health Network's current strategic plan, which prioritises the six identified areas. This focus allows for a more concentrated effort on addressing the most pressing health needs and maximising the impact of limited resources.

### 3.1. Potentially preventable hospitalisations

Overall, the South Eastern New South Wales Primary Health Network Needs Assessment raises key concerns about the rates of potentially preventable hospitalisations across the region with notable interest towards the Bega Valley, Eurobodalla, Goulburn Mulwaree, and Upper Lachlan Shire as rates were significantly higher than the NSW state average. Of these hospitalisations, the five most common conditions in the catchment consisted of chronic obstructive pulmonary disease, congestive cardiac failure, cellulitis, diabetes complications, and urinary tract infections.

### 3.2. Chronic conditions and prevention initiatives

Likewise, premature mortality figures are higher in the South Eastern New South Wales region compared to state and national averages attributed to a higher incidence of chronic conditions including lung cancer, bowel cancer, prostate cancer and breast cancer. Additionally, a lack of affordable prevention programs targeting risk factors for chronic conditions is emphasized. For the South Eastern New South Wales region, the evolving increase in cancer and other chronic conditions is projected to rise by 70% since the 2006 South Eastern New South Wales Primary Health Network Needs Assessment.

### 3.3. Mental health and suicide

Similarly, mental health and suicide were highlighted as a priority health concern as the South Eastern New South Wales region had a rate higher than the state and the national average of persons suffering from some form of long-term mental or behavioural problem with the highest prevalence in the Bega Valley, Eurobodalla, and Goulburn Mulwaree areas. Also contributing to the rates of preventable hospitalisations, mental disorders have been increasing steadily since the 2014–2015 estimates. Undesirably, mortality rates attributed to mental health and behavioural disorders have also been trending similarly. Closely linked to mental health disorders, community-based consultations have identified high levels of co-existing drug and alcohol usage.

### 3.4. Drug and alcohol

Drug and alcohol usage has increased in the region since 2014–2015 estimates with higher rates noted in the southern areas compared to the Illawarra Shoalhaven.

For the South Eastern New South Wales region, cannabis, cocaine, and ecstasy remain the highest used illicit substances. However, it was noticed that the evolving use of crystal methamphetamine was of increasing concern for the region's community leaders. Already known to be problematic and likely to cause significant negative impacts on families and communities, the use of methamphetamine during multiple substance use is becoming more frequent. Unsupportive of this, a lack of rehabilitation service distribution was likewise highlighted as the concentration of current providers was located predominantly around urban areas such as Wollongong, Shellharbour, Nowra, and Queanbeyan. Furthermore, none of the centres was said to provide specialist and contextualised service for the Aboriginal population. This was further highlighted as providers observed an increase in methamphetamine usage amongst the Aboriginal population.

### 3.5. Culturally appropriate health services

The South Eastern New South Wales region is home to 3.2% of Australia's Aboriginal population and 9.7% of NSW's total Aboriginal population, a significantly greater proportion when compared to the state and national averages. However, the South Eastern New South Wales Primary Health Network reports that there is a shortage of providers that offer a culturally responsive service and an inequitable distribution of Indigenous-specific funding throughout the region. Similarly to this, a significant proportion of the population identifies as being of a non-English speaking background. Particularly in the Illawarra, Shoalhaven, and Queanbeyan areas several of whom identified as having poor proficiency in speaking English. This population likewise reports limited culturally tailored services in the region. The report further highlighted that the access and utilisation of interpreter services were poorly perceived.

## 4. Recommendations

Recommendations for system changes should be subjected to Duckett and Willcox's [2] criteria for an ideal health system to evaluate how the recommendations will address or fulfil each of the four criteria.

- Shift the responsibility of chronic condition management away from the hospital systems.

There is a need to reduce the rates of potentially preventable hospitalisations across the South Eastern New South Wales region as the hospital system is unable to cater for the surging demand. Identified within the needs assessment, an array of chronic conditions were attributed to this issue. Therefore, it can be recommended that an intervention be targeted to address chronic conditions in the public or pre-hospital context with efforts to reduce the resource and economic burden and improve the region's health sector efficiency. Attributed to this, it has been highlighted that a change is required to shift the ongoing responsibility of chronic condition management onto the patient by encouraging a self-management model. Leveraging the potential of people to care for themselves has beneficial implications for the increasing rates of hospitalisations and health system pressures as effective self-management would reduce the likelihood and severity of chronic condition presentation required hospitalisation [3,4]. To establish this change, ownest needs to be placed on the primary health providers to adequately educate the patient about their condition; what complications are commonly reported; how to self-identify an evolving complication; and escalating strategies to self-manage the complication or allow an alternative treatment pathway independent of hospital admission [4]. Engaging with the patient and family as stakeholders in decision-making is well documented to empower them to feel a sense of social equity and confidence fostering the voluntary adoption of the recommendation and validating Duckett and Willcox's [2] acceptability of health service [5,6]. Specifically, general practitioners and practice nurses are well-positioned to support the delivery of patient self-management in a structured capacity tailoring the management program in a contextualised manner reflective of the area's available services and individual disposition whilst engaging other pertinent stakeholders including patients, families, condition specialists, and community care providers, forming a supportive network harmonious of self-management goals [5].

- Enhance the emergency departments to have 24-h mental health service coverage.

Mental health disorders and suicide were highlighted as a priority health concern as the South Eastern New South Wales region had a rate higher than the state and national average. To combat this, it is recommended all emergency departments be enhanced to have a mental health service with 24-h coverage. Having around-the-clock service to provide specialised mental health assessment and management for patients in crisis has key witnessable benefits. When paralleled with any necessary medical intervention, a mental health team assists by easing the increasing pressure on the hospital system and minimising the hospitalisation length of stay [7, 8]. Likewise, evidence supports that having access to prompt psychiatric crisis services in emergency departments increases the likelihood of a patient engaging with mental health professionals before a crisis event occurs. This results in patients being more receptive to treatment and, if shared decision-making is incorporated, an increased sense of autonomy, patient satisfaction, and ability to cope [8]. Ultimately, having access to appropriately trained mental health staff reduces the rates of self-harm behaviour and lowers the risk of suicide [9]. By increasing access to mental health services in all 16 emergency departments, all four of Duckett and Willcox's [2] criteria can be seen to be enhanced. Firstly, the equity criterion is improved as the service access is more evenly distributed from a geographical aspect. This is important as areas such as Bega Valley and Eurobodalla often do not have physical access to mental health services. Likewise, the quality of service being delivered is improved as the patient will receive treatment from appropriately qualified mental health staff. This becomes equally beneficial to the emergency department nursing staff who report frustration linked to a lack of knowledge, skills and expertise, and insufficient resources to treat mental health conditions effectively [10]. More so, the efficiency of service delivery is enhanced as patients will no longer require a lengthy transfer of care due to the emergency department's inability to provide mental health services. Lastly, the acceptability criterion is met as patients will report increased satisfaction with the service provided as it encompasses their needs more acutely.

- Universally adopted Substance Use Screening Tool be implemented across all levels of healthcare.

It was noticed that the evolving use of drugs such as crystal methamphetamine was of increasing concern throughout South Eastern New South Wales. However, most patients with substance use disorders do not receive care for this issue from primary healthcare providers [11]. Evidence suggests that there is a lack of detection of at-risk and problematic substance use failing to 'seize the moment' and opportunistically provide interventions [11]. Largely agreed upon, early detection with brief interventions at crucial times can have significant benefits in addressing substance use problems, especially in youth demographics [12,13].

It is recommended that a universally adopted substance use screening tool be implemented across all levels of healthcare. Although tailoring for the demographic may be required, for example in the emergency department rather than in youth community care, the purpose of having a standardise screening method will promote consistency when measuring trends in the patient and population behaviours and characteristics of substance use [14]. By embedding screening into daily practice, health staff will become increasingly confident in managing the impacts of substance use and be able to provide early intervention or referral to specialised services [12]. Furthermore, if these specialised services are linked to the health facility then a positive screening result may promote an automatic need for consultation thus contributing to a holistic model of healthcare. This method of screening has proven successful when activating key services such as the Domestic Violence Screening Tool during maternal care and the Falls Risk for Older People in the Community screening tool, each promoting an automatic referral to a specialised service [15,16].

Similarly, to improving mental health services, this quality enhancement of current drug and alcohol services improves the delivery of health services by enabling a holistic care model. Efficiency is likewise improved as patients with substance disorders will be identified earlier and promptly referred to specialist assistance stemming the progression of the illness. It is however noted that this intervention does not truly improve equality and acceptability of services as the screening intervention is only achieved if the patient seeks care and is openly responsive to screening questions.

- Redesigning culturally appropriate services.

It was highlighted that the South Eastern New South Wales region is culturally and linguistically diverse and is home to a high concentration of Indigenous Australians. However, it was likewise noted that the health services currently on offer in the region fall short of providing culturally tailored services to these populations. Evidence demonstrates a growing recognition of the importance of cultural competency and cultural safety at both individual health provider and organisational levels to achieve equitable health care [17]. To achieve this training and development of the health workforce remain the principal strategy towards the goal of improved cultural competence [18]. However, further initiative is required to close the gap in health disparities.

As chronic disease in Aboriginal and culturally and linguistically diverse communities is high compared with the general population, it is recommended that organisations target their efforts towards chronic disease prevalence and likewise involve community stakeholders and interpretation services in developing care pathways appropriate to each demographic. With stakeholder involvement, such as the community leaders or respective elders, healthcare providers can utilise their cultural competence training and ensure the services being provided are tailored and culturally acceptable. As the focus of the service redesign is targeted to improve equity and reduce the health disparity between different cultural groups, Duckett and Willcox's criterion is met. However, as tailoring services to meet different cultural expectations is more involved, the efficiency of health service delivery is compromised.

## 5. Limitations

This report acknowledges the inherent limitations of prioritising a select number of health areas. While the chosen priorities represent significant concerns within the South Eastern New South Wales Primary Health Network region, other health needs warranting attention may not be fully addressed within this scope. It is acknowledged that further investigation is required to address the barriers of stigmatism, voluntary patient engagement, financing, and geographical-specific challenges that may arise during implementation.

## 6. Conclusion

This report has provided an analysis of the key epidemiological and demographic concerns impacting the South Eastern New South Wales Primary Health Network. By examining data on potentially preventable hospitalisations, chronic conditions, prevention initiatives, mental health and suicide, drug and alcohol use, and culturally appropriate health services, six priority areas demanding immediate attention were identified. These areas were prioritised due to their significant contribution to the overall health burden within the region and the potential for positive impact through targeted interventions.

To address these pressing concerns, this report has put forth four evidence-based recommendations designed to enhance the Australian healthcare system, specifically within the South Eastern New South Wales Primary Health Network region. These recommendations advocate for increased access to mental health services in emergency departments, the implementation of a universally adopted substance use screening tool across all levels of healthcare, the redesign of culturally appropriate services to better serve Indigenous Australians and culturally and linguistically diverse populations, and the promotion of patient self-management strategies for chronic conditions. Each recommendation was evaluated against Duckett and Willcox's criteria for an ideal health system, demonstrating their potential to improve equity, quality, efficiency, and acceptability of healthcare services.

While this report acknowledges the complexities of healthcare delivery and recognises that challenges may arise during the implementation of these recommendations, it underscores the urgency of addressing these priority areas to improve the health and well-being of the South Eastern New South Wales Primary Health Network population. Further research and evaluation will be crucial to assess the long-term impact of these recommendations and to inform ongoing efforts to optimise healthcare delivery within the region.

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## References

1. Department of Health. South Eastern NSW-Primary Health Networks Needs Assessment. Australian Government; 2020.
2. Duckett S, Willcox S. Australian Health Care System, 5th ed, Oxford University Press; 2015.
3. Grady PA, Gough LL. Self-Management: A Comprehensive Approach to Management of Chronic Conditions. American Journal of Public Health. 2014; 104(8): 25-31. doi: 10.2105/ajph.2014.302041
4. Hardman R, Begg S, Spelten E. What impact do chronic disease self-management support interventions have on health inequity gaps related to socioeconomic status: a systematic review. BMC Health Services Research; 2020.
5. Alex J, Ramjan L, Salamonson Y, Ferguson C. Nurses as key advocates of self-care approaches to chronic disease management. Contemporary Nurse. 2020; 56(2): 101-104. doi: 10.1080/10376178.2020.1771191
6. O'Rourke T, Higuchi K, Hogg W. Stakeholder Participation in System Change: A New Conceptual Model. Worldviews on Evidence-Based Nursing; 2016.
7. Skopek M, Francis J. Presentations by ambulance under the NSW Mental Health Act to an emergency department with a 24-hour mental health team. Australasian Psychiatry; 2016.
8. Thomas K, Owino H, Ansari S, et al. Patient-Centered Values and Experiences with Emergency Department and Mental Health Crisis Care. Administration and Policy in Mental Health and Mental Health Services Research; 2018.
9. Wasserman D, Iosue M, Wuestefeld A, & Carli V. Adaptation of evidence-based suicide prevention strategies during and after theCOVID-19 pandemic. World Psychiatry; 2020.
10. Zun L. Care of Psychiatric Patients: The Challenge to Emergency Physicians. Western Journal of Emergency Medicine. 2016; 17(2): 173-176. doi: 10.5811/westjem.2016.1.29648
11. Berends L, Lubman D. Are Medicare Locals the answer? Obstacles to alcohol and drug care; 2013.
12. Clifford A, Shakeshaft A. Evidence-based alcohol screening and brief intervention in Aboriginal Community Controlled Health Services: Experiences of health-care providers. Drug and Alcohol Review; 2011.
13. Spooner C, Miller S. Substance Use and Young People Framework. NSW Ministry of Health, Sydney; 2014.
14. Derges J, Kidger J, Fox F, et al. Alcohol screening and brief interventions for adults and young people in health and community-based settings: a qualitative systematic literature review. BMC Public Health. 2017; 17(1). doi: 10.1186/s12889-017-4476-4
15. O'Reilly R, Peters K. Opportunistic domestic violence screening for pregnant and post-partum women by community based health care providers. BMC Women's Health; 2018.
16. Russell M, Hill K, Day L, et al. Development of the Falls Risk for Older People in the Community (FROP-Com) screening tool. Age and Ageing; 2008.
17. Curtis E, Jones R, Tipene-Leach D, et al. Why cultural safety rather than cultural competency is required to achieve health equity: a literature review and recommended definition. International Journal for Equity in Health. 2019; 18(1). doi: 10.1186/s12939-019-1082-3
18. Jongen C, McCalman J, Bainbridge R. Health workforce cultural competency interventions: a systematic scoping review. BMC Health Services Research; 2018.

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