Review Article

# Interventions to Improve Health Literacy in Nigeria: Systematic review of effectiveness and policy recommendations

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## Abstract

**Background:** Health literacy plays a crucial role in enabling individuals to navigate and make informed decisions within the healthcare system. It encompasses the ability to understand, interpret, and act upon medical information and instructions, as well as the capacity to source and analyse relevant health information for preventive measures and self-care. This paper explores the interventions aimed at improving health literacy in Nigeria and synthesizes policy recommendations for the Nigerian government.

**Method:** A systematic literature review based on the PRISMA methods was carried out to identify published interventions and reported effectiveness in the Nigerian population. A search strategy using key words health literacy and health interventions was executed in PubMed, Embase and African Index Medicus. A total of 268 records were screened for relevance and 18 were identified.

**Results:** Of the 18 reports identified, 13 interventions were effective, 3 interventions had mixed results reporting effectiveness in some domains and ineffectiveness in other important domains, while 2 interventions were not effective. The nature of effectiveness in the interventions was based on the outcomes as reported in the identified studies.

**Conclusion:** The health literacy situation in Nigeria provides a background into some of the challenges faced in achieving universal health coverage and promoting health in Nigeria. Low literacy rates, particularly in its many rural areas, the lack of functional, communicative, and critical health literacy competencies among many adults, as conceptualised in literature pose a significant obstacle to health literacy development in Nigeria. Many of the health literacy interventions have been effective to address various aspects of health literacy on a rather small scale. To comprehensively address the problem, collaborative efforts involving the government, healthcare professionals, non-governmental organisations, media, and the community are necessary.

**Keywords:** Health literacy, Health policy, Health promotion, Nigeria, Policy Recommendations.

## Introduction

The Scientific Affairs Committee on Health Literacy defined health literacy as the capacity to comprehend, interpret, and act on medical information and situations.[1] Schillinger et al.[2] measured an individual's ability to read, understand, and act on medical instructions. Malik et al.[3] argued that health literacy should include the ability to source and analyse health information and use it to prevent illness and improve



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health habits. This definition highlights health literacy as a key factor in enabling self-care. Self-care requires health literacy and patient empowerment, and this includes teaching digital health, community education, primary healthcare, and health education in school. To improve health literacy, practices such as identifying self-care, using digital technology, promoting health info through media, setting up info centres, documenting self-care, publishing guides, and establishing communication channels should be implemented at international, national, regional, community, family, and institutional levels.[4,5]

WHO advocates for universal health literacy to ensure everyone has equal access to health services. Nigeria has made progress towards universal health coverage, e.g., the Basic healthcare provision fund in the 2014 National Health Act, signed in 2018, and the National Health Insurance Authority bill in 2022. The 2014 NHA enables funds from various sources to support access to primary healthcare services such as maternity and childcare. The 2014 NHA mobilises funds from various sources to fund primary healthcare services.[6]

Nigeria's adult literacy rate is 62% overall, 28% for those over 65, 59.5% for rural males, and 35.4% for rural females,[7] highlighting a major problem for health literacy. A survey of rural women in a southern Nigerian community revealed that most of them had inadequate functional literacy and poor health literacy in terms of functional, communicative, and critical health literacy competencies.[8] A survey of 1831 people in metropolitan Lagos found 74.8% were health literate.[9] Internet use, knowledge of a common antibiotic, English language use, and broadcast media use were linked to higher health literacy.

Adekoya-Cole *et al.,*[10] noted that the culture and belief system, low educational level, low socioeconomic status, and poor and ineffective communication are some of the factors that influence health literacy, particularly in Nigeria. In improving this situation, the authors called for a collaborative effort led by the Government between professional health workers, health system personnel, non-governmental organisations, media and the community. Some of the problems associated with low health literacy include a low selfcare index, poverty, overburdened healthcare system, high medicine costs and fake medicines. Other factors responsible for Nigeria's significantly low health literacy level include culture, lack of knowledge on preventive services use, and frequent hospital visits.[10]

Nigeria's self-care index is fairly low.[11] According to the same report, stakeholder support and adoption is among the highest in the survey, regulatory environment is also fairly strong, while the scores are somewhat lower in health policies for self-care and patient empowerment. Nigeria has a huge informal sector that relies on traditional, religious and trado-medicinal practices. It is not uncommon to see hawkers on the street promoting 'cures' and brandishing all sorts of testimonies. Another possible reason is high poverty (40%), as Nigeria is among the poorest nations in the world despite its incredible natural resources.[12] This poverty also manifests in increasing numbers of out-of-school children, limited enrolment in health insurance and an increasingly overburdened healthcare system. The decay of the primary healthcare system in Nigeria also contributes, as the secondary and tertiary institutions are approached for almost every disease condition, leading to long queues and unsatisfactory healthcare.[13] Nigerians know how to and are forced to take care of themselves via these alternative means. Despite the outcry from the National Agency for Food, Drug Administration and Control (NAFDAC) and Pharmacists' Council of Nigeria to regulate some of these medicines and outrageous claims challenges, they keep multiplying. There are also problems of fake medicines, high costs, and ineffective supply chains.[14]

The specific review questions addressed in this paper are to identify what interventions were carried out in Nigeria in the period under review, their effectiveness and to synthesize evidence-based recommendations to improve health literacy in Nigeria.

## Method

The systematic review was conducted according to the advised reporting methods for reviews using the PRISMA methods.[15]

***Eligibility Criteria:*** This paper reviewed interventional studies, randomised control trials, observational, cohort, and cross-sectional studies. The search framework, as defined below, forms the basis for inclusion and exclusion in the review.

- Population – Teenagers aged 16 and above, and adults
- Intervention – Health literacy, Health promotion interventions
- Context – Healthy and sick individuals



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- Outcomes – Health and Societal outcomes, modifiable determinants of health, intervention impact as measured by the published article.

***Search Strategy:*** The following key words and Boolean operators were used for the search.

1. ('health literacy'/exp OR 'health literacy' OR 'health promotion') AND ('nigeria'/exp OR nigeria) AND ('interventions'/exp OR interventions)
2. ('health literacy'/exp OR 'health literacy') AND ('nigeria'/exp OR nigeria)
3. ('health literacy'/exp OR 'health literacy') AND ('health promotion'/exp OR 'health promotion' OR 'health education'/exp OR 'health education') AND ('nigeria'/exp OR nigeria)
4. #3 AND ('cohort analysis'/de OR 'controlled study'/de OR 'intervention study'/de OR 'participatory research'/de OR 'pilot study'/de OR 'qualitative research'/de OR 'randomized controlled trial'/de OR 'randomized controlled trial topic')

***Data Extraction:*** The results and screening details were reported in a PRISMA flow diagram. The data from the selected publications were categorised and summarised in a Microsoft Excel sheet according to author, year, country of study, aim, intervention, population, description and results to logically show the work process and enable ease of reporting.

***Quality assessment:*** The risk of bias for included studies was done using the Johanna Briggs Institute (JBI) critical appraisal tool for the appropriate type of study i.e., JBI checklist for observational studies, JBI checklist for cross-sectional studies, and JBI checklist for randomised control trials.[16]

## Results

The paper reviewed interventions to improve health literacy in over 3000 patients combined. The interventions identified were carried out across general populations and also varied therapeutic areas to varying degrees of effectiveness.

***Study Identification:*** A total of 268 records were identified. 188 from PubMed, 5 from Medline, 35 from Embase, and 40 from the African Index Medicus. Of these, 13 were excluded as duplicates, and 232 were further excluded after a title and abstract review. 23 full texts were retrieved for a full review, and 5 were excluded on the basis of the type of intervention, age of participants, and unrelated study outcomes, thus presenting 18 articles for the full review. A summary is shown in the PRISMA flow diagram (figure 1 below). A critical appraisal of the intervention quality for the 18 articles was completed. 13 of these studies were rated good, and 5 were fair. None of them were excluded. A summary is shown in Table 1.

### Impact of Interventions to improve health literacy in Nigeria

13 interventions were recorded to have a successful impact on improving health literacy in the specific domains. In assessing the impact of web-based support groups on health literacy in people living with HIV/AIDs, Duli L *et al.*[17] were able to show high patient treatment retention in the intervention and control arms (75.7% and 83.4%), respectively, higher patient knowledge in the intervention group with additional qualitative data showing contribution of the intervention to retention, adherence and social support as some of these could not be quantified quantitatively. Ofotokun *et al.*[18] also showed the impact of adapting audio messages to the local population, with a change in related knowledge from below 80% before the intervention to more than 80% after the intervention. To discourage female genital mutilation practices, Asekun-Olarinmoye and Amusan[19] engaged traditional excisors (who perform the procedure) and community members on the harmful practices and ill benefits using health education and in-depth interviews. Post-intervention, the number of men in particular and women who did not want the practice stopped reduced significantly, and the number of people in the community who decided not to circumcise subsequent female children reduced.

To address health literacy to improve malaria outcomes, a community dialogue promoted by the United Nations Children Emergency Fund (UNICEF)[20] showed higher mean scores in malaria prevention and control for participants in the community dialogue (3.8550) in comparison with non-participants (2.3105). Another health education programme in a community intervention to promote the use of long-lasting insecticidal nets[21] resulted in an increase in the utilisation of these nets in the intervention community from 45.4% pre-intervention to 89.9% post-intervention and 38.1% pre-intervention to 62.6% post-intervention in the control community.

In addressing female and maternal health, 4 interventions were successful, while 1 intervention wasn't successful. The use of volunteer household



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counsellors in two Nigerian states in the Maternal and Child Integrated Program (MCHIP),[22] showed that mothers who received the counselling have better knowledge of birth preparedness and complication readiness compared to those in the control group (Relative Risk [R.R.] 2.30, 95% [C.I.] 1.50, 3.51, P = 0.0001). In addition, the mothers who participated in the intervention also showed significantly better knowledge of the troubling signs or potential complications during delivery and the post-partum period compared to the controls. (R.R. 1.48, 95% C.I. 1.05, 2.09, P = 0.02), and post-partum period (R.R. 1.69, 95% C.I. 1.22, 2.32, P = 0.001).

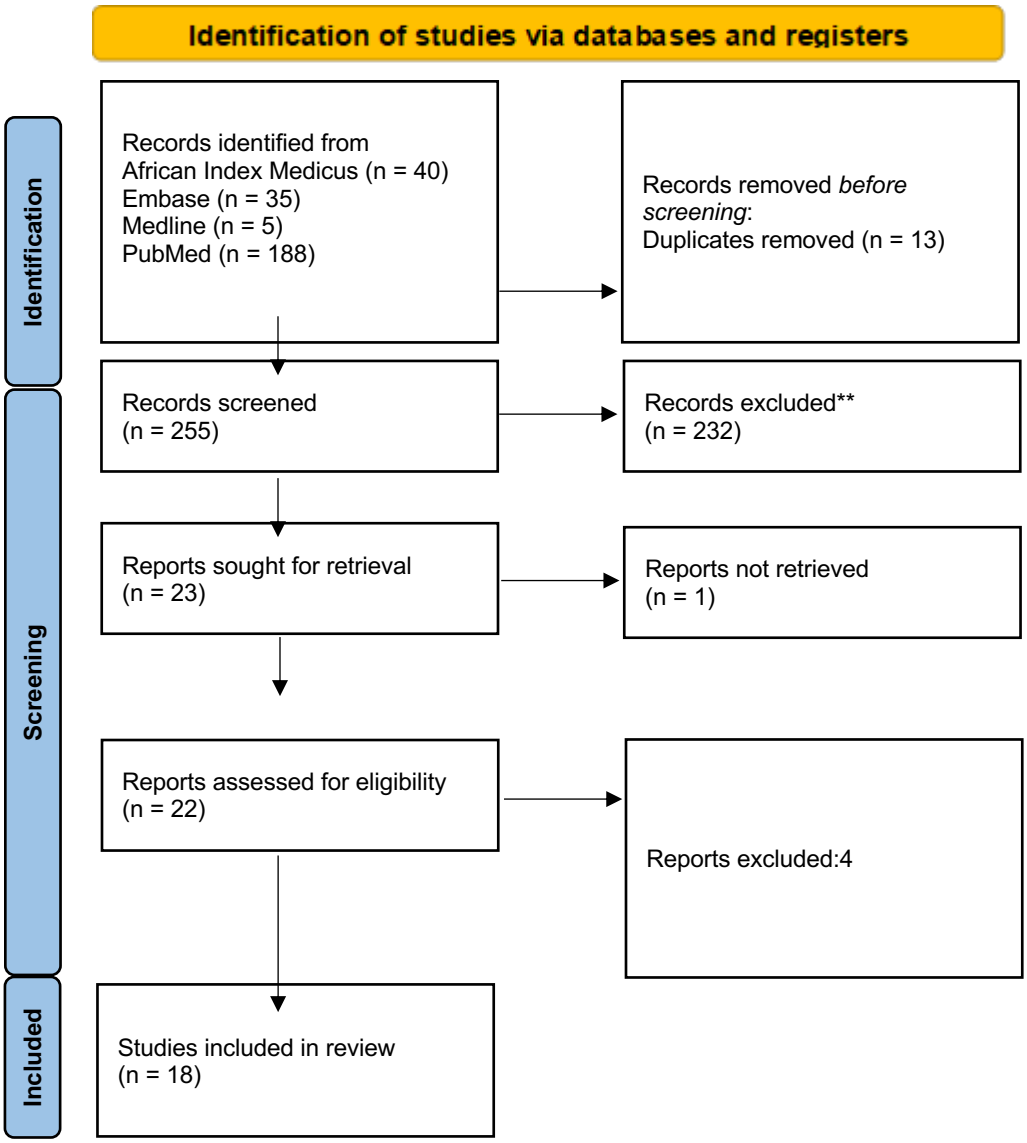


**Figure 1:** PRISMA flow diagram showing the search for health literacy interventions in Nigeria



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**Table 1:** Critical Appraisal Quality Summary of publications selected for review

| Author and Year | Quality Judgement | Appraisal Decision |
|---|---|---|
| Ofotokun et al. (2010) | Good | Include |
| Ishola et al, (2017) | Good | Include |
| Egeonu & Nwachukwu (2013) | Fair | Include |
| Mbachaga (2017) | Fair | Include |
| Aja et al. (2011) | Fair | Include |
| Wogu (2018) | Fair | Include |
| Perl et al.(2014) | Good | Include |
| Ebuehi (2009) | Good | Include |
| Al-Mujtaba et al. (2020) | Good | Include |
| Ordinioha (2012) | Fair | Include |
| Bolarinwa et al. (2018) | Good | Include |
| Dulli et al. (2020) | Good | Include |
| John et al. (2020) | Good | Include |
| Atilola et al. (2022) | Good | Include |
| Abubakar et al. (2020) | Good | Include |
| Bella-Awusah et al. (2014) | Good | Include |
| Yilgwan et al. (2019) | Good | Include |
| Asekun-Olarinmoye & Amusan (2009) | Good | Include |
| Komolafe et al. (2020) | Good | Include |

The use of drama in communities to promote sustainable health and prevent transmission of HIV/AIDS to children from their mothers[23] was also very useful as participants noted several misconceptions, they had prior to the intervention were dispelled during the focus group discussions afterwards. The use of village health workers[24] in communities to deliver home-based antenatal care and basic maternal and health education was perceived as successful by the participants in focus group discussions resulting in a recommendation for the program to be scaled up. Another successful intervention was a church-based adult learning intervention delivered by pastors' wives who had participated in a prior workshop.[25] The church interventions used drama on violence against women, use of medicines, nutrition, female health, family planning and cervical cancer quizzes. Multiple churches have carried out these interventions locally within three months of the original workshop, confirming the effectiveness and use of activity-based workshops to improve health literacy. The maternal newborn and child week organised by the state Ministry of Health[26] was perceived to not be successful due to the poor implementation of the program in line with the objectives. There were issues with social mobilisation, lack of commodities, and poor vaccine availability.

Using gender socialisation training, literacy education and contraceptive counselling[27] showed a reduction in physical intimate partner violence compared to the controls. Also, they reported a marginally significant change in emotional and sexual intimate partner violence, thus reporting mixed results quantitatively, though qualitatively, there were improvements in communication, trust, and mutual respect. In attempting to increase health literacy on smoking, using multiple advertisements[28] across Nigeria, Senegal and Kenya, the graphic health harms ad targeted at smoking was perceived as effective in smokers and non-smokers.

The three health literacy interventions related to cardiac conditions were perceived as effective. Bolarinwa *et al.*[29]



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in a home-based follow-up care method showed a significant increase in health-related quality of life compared to baseline and controls. The intervention group also showed a statistically significant improvement in blood pressure management, symptom frequency and adherence to medication. Yilgwan C *et al,*[30] proposed the use of visual and auditory media in local languages to improve knowledge of rheumatic diseases in a community. On a scale of 10, the mean pre-test score for the visual tool was 2.78, and the mean post-test score was 4.90 (r=0.3, p=0.04). The mean pre-test score for the auditory tool (jingles) was 3.3, while the mean post-test score was 5.2 (r=0.45, p=0.002). After a school-based health education intervention to improve knowledge and information-seeking behaviour of stroke,[31] the intervention group had higher mean scores on understanding of stroke and its risk factors than the control group.

One intervention was successful in addressing mental health literacy and related disorders, while the other had mixed results. A post-intervention assessment of a school-based training program using a 4-module depression awareness curriculum (break free from depression),[32] revealed significant positive changes in knowledge, attitudes, and confidence among students and teachers, but the mental health teaching programme[33] organized by engaged secondary school students in mental awareness sessions showed mixed results, with slightly higher knowledge scores but fairly constant social perception and attitudes scores. These scores all returned to baseline after a six-month assessment period. The interventions were spread across the 6 geo-political zones in Nigeria and covered states such as Kano, Zamfara, Rivers, Kwara, Oyo, Akwa-Ibom, Gombe, Osun, Plateau, Imo, Ebonyi, and Benue states. 13 interventions were considered effective, 3 intervention had mixed results reporting effectiveness in some domains and ineffectiveness in other important domains, while 2 interventions were not effective. A summary of the intervention format, health topic addressed, state of implementation and effectiveness is presented in Table 2.

**Table 2:** Summary the effectiveness of Health Literacy Interventions in Nigeria

| Author & Year | Intervention Format | Health Topic | State | Effectiveness |
|---|---|---|---|---|
| Ishola *et al.,* 2017 | Volunteer household counsellors | Birth Preparedness and Complication | Kano & Zamfara state | Yes |
| Abubakar *et al.,* (2020) | Health education | Use of long-lasting insecticidal nets | Gombe State | Yes |
| Mbachaga (2017) | Drama | Sustainable health & Mother to Child HIV transmission | Benue State | Yes |
| Egeonu & Nwachukwu (2012) | Community Dialogue | Malaria Prevention & control | Imo State | Yes |
| Bolarinwa *et al.,* (2019) | Home Based Follow up care | Quality of Life of Hypertensive Patients | Kwara state | Yes |
| Bella-Awusah *et al.,* (2014) | Mental health teaching programme | Mental illness | Oyo state | Mixed |
| Ofotokun *et al.,* (2010) | Culturally adapted audio awareness | HIV/AIDS awareness | Kano state | Yes |
| Perl *et al.,* (2015) | Multiple Advertisements | Smoking | Nigeria | Yes |
| Atilola *et al.,* (2022) | School-based training program | Depression | Oyo, Ogun and Osun | Yes |
| Wogu (2018) | Mass media campaign | Lassa fever | Ebonyi | No |
| Komolafe *et al.,* (2020) | School Health education Intervention | Stroke | Osun state | Yes |
| Yilgwan *et al.,* (2019) | Visual and Auditory media | Rheumatic heart disease | Plateau | Yes |



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| Author & Year | Intervention Format | Health Topic | State | Effectiveness |
|---|---|---|---|---|
| Aja *et al.,* (2011) | Church-based intervention - Adult learning: Women and Health Learning Package (WHLP) | Women's health | South east Nigeria | Yes |
| Al-Mujtaba *et al.,* (2020) | Village health workers (VHW) program | Maternal health | Gombe state | Yes |
| Dulli *et al.,* (2020) | Support groups | Living with HIV | Akwa-Ibom | Mixed |
| John *et al.,* (2022) | Combination of gender socialization training, financial literacy education, and contraceptive counselling | Intimate Partner Violence | Oyo State | Mixed |
| Ordinioha (2013) | Maternal, Newborn and Child Health Week | Maternal & Child Health | River state | No |
| Asekun-Olarinmoye & Amusan (2008) | Health education | Female genital mutilation | Kwara state | Yes |

## Discussion

The interventions in Nigeria aimed to mainly improve disease or condition-specific health literacy, such as in HIV/AIDS, maternal and child health, female genital mutilation, depression, cardiac conditions, intimate partner violence, mental health, viral conditions and malaria. While there is an acceptance that the knowledge gained from specific conditions, especially ones that are endemic in the region, could also help increase overall health literacy, there is still a need for properly structured general health literacy interventions that could be applied to multiple scenarios and even adapted to disease-specific conditions. Furthermore, many of the interventions aimed at specific conditions did not result in significant increases in general health literacy. There is probably an impact of low education and literacy rates because many of the skills learnt are transferrable.

The use of structured education programs was a common and well-used approach, as an impact was positively recorded in health behaviours for the use of long-lasting insecticidal nets, HIV/AIDS awareness, and female genital mutilation. Some of these health education programs may be reviewed, expanded and standardised, drawing on the positives. These programs could also be used to design general health literacy approaches. The community-based results were very promising and seem to be a decent strategy in improving health literacy in situations that have profound public health impact. Some of these include disease outbreaks, elderly care, vaccination campaigns etc. The mixed results obtained in mental and related issues intervention further highlight the complexity and multifaceted nature of these social issues. Thus, more collaborative programs need to be explored. The widespread nature of the review highlights the varying effectiveness in regions and the need for local and community-based interventions in addressing region-specific health challenges. Another problem highlighted in the review is the political will and desire to follow through. As seen in the maternal and child health week in rivers state, it is important that financial resources, supply chain and logistics, and human resources be properly managed. The best-planned programs can be as ineffective as no intervention where these key components are not properly utilised.

The interventions, as before, also covered school-based health education courses, digital and web-based interventions, print materials and workshops. Over time, one of the recurrent key strategies proposed to improve health literacy was incorporating these programs into the school curriculum and ensuring that all levels of education benefited from these teachings. The school-based interventions yielded positive results and have been well proven in literature and also in this review despite the slight variations in their design.

Interventions to provoke behavioural changes repeatedly resulted in mixed effectiveness; hence there is a need to identify the key components of health and social life that could support or correlate with



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behavioural changes, design interventions to incorporate these identified correlates and evaluate the impact of the newly designed interventions in several contexts. The interventions, similarly to Nigeria, also had varied impacts in the regions and further highlight the need for the incorporation of local contexts in general or larger designs.

One of the key themes and problems in health literacy, as seen in this study, is the need to unify the outcomes. Patient-reported outcomes in diseases are able to showcase patient status and could be disease-specific or general. More health literacy and health promotion interventions should use the already adopted outcome measures.

***Policy Recommendations:*** To comprehensively address health literacy in Nigeria, a multifaceted approach is recommended. First, the establishment of a National Health Literacy Taskforce under the Ministry of Health should be prioritized, serving as the central entity responsible for coordinating research efforts, management, and setting the direction for health literacy initiatives across the nation. Secondly, a concerted effort should be directed towards enhancing school-based interventions. This can be achieved by investing in comprehensive health education programs within schools, with a specific focus on promoting health literacy, healthy behaviours, and disease prevention.

Simultaneously, a renewed focus must be placed on targeted community engagement initiatives involving local leaders, volunteers, and community organizations. These community-based interventions will play a vital role in promoting health education, raising awareness, and driving positive behavioural changes among the population. Importantly, the design of health literacy and health promotion interventions should take into account regional variations, cultural norms, and specific health challenges in different Nigerian states to ensure their relevance and effectiveness.

Furthermore, addressing the complexity of mental health requires the establishment of a specialized task force to coordinate this response. This task force's efforts, including pilot programs, should be supported with allocated resources to develop and implement targeted interventions, given the multifaceted nature of mental health issues.

Strengthening collaboration and coordination among government agencies, non-governmental organizations, and healthcare providers is crucial to maximize the impact of interventions while ensuring efficient resource allocation. This approach aims to reduce the negative influence of politics and encourage positive collaboration. To maintain transparency and effectiveness, the task force should prioritize monitoring and evaluation, establishing robust systems to assess intervention effectiveness, identify areas for improvement, and guide evidence-based decision-making. Public-private partnerships should also be encouraged to leverage the expertise and resources of private sector organizations in implementing and scaling up health literacy initiatives. Promoting research on health literacy and innovative approaches is essential to address specific health issues, ensuring that interventions are evidence-based and aligned with best practices. Additionally, investing in health workforce training is necessary to empower healthcare providers to promote health literacy and deliver effective health education to patients.

Lastly, embracing health information technology, such as digital platforms, mobile applications, and online resources, can significantly enhance the dissemination of health information, engage the population, and improve access to health literacy materials, further advancing the overall health literacy landscape in Nigeria.

***Limitations of the study:*** The literature review was robust and was complemented by a rigorous quality assessment. However, the literature review was completed by one person, thus bias may not be completely eliminated.

## Conclusion

To improve health literacy in Nigeria, interventions should focus on health literacy, health promotion and disease prevention, and healthcare delivery. This includes integrating health information into policies, enhancing communication between healthcare providers and patients, ensuring clear and concise instructions, expanding the roles of healthcare workers, strengthening patient advocacy groups, and implementing licensing options for digital health applications. It is also crucial to address the distinction between health literacy and patient empowerment, as both concepts are interrelated and require simultaneous attention.

## Declarations

***Conflict of interest:*** **No conflict of interests**



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