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Integrating Occupational Health into Primary Healthcare in Nigeria: A Narrative Review and Policy Analysis

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Abstract
Occupational health remains a marginal aspect of health service delivery in Nigeria, despite a workforce that is greatly informal and unprotected by existing occupational safety and health structures. With an estimated 80-93% informal sector employment in Nigeria, the occupational health infrastructure, which was largely targeted in the Factories Act (Cap F1, LFN 2004) and the National Policy on Occupational Safety and Health (2006), has been developed and adapted for the formal sector. Further, the health workforce is extremely dispiriting due to density of physicians, estimated at 0.29-0.36 per 1,000 population, and a projected shortfall of tens of thousands physicians across the country by 2030. By contrast, the primary health care (PHC) is the most widespread locus where the health system meets the population including working people, and a platform on which basic functions of occupational health can be provided without parallel systems and structures. This paper aims to examine the evidence basis for integration of BOHS through a narrative literature review with a policy analysis, drawing on literature from countries around the world where the integration of BOHS has been explored and experiences from four countries and regions purposively selected to reflect diverse models of health financing and service delivery: Finland, Brazil, Thailand, and Southern African Development Community (SADC). It then compares the existing occupational health policy framework in Nigeria with the WHO/ILO delivered policy framework, explores the challenges for integration by the absence of workforce, funding, education programs, and data collections, both at the national and subnational level, and reviews an emerging subnational example, the first and only occupational health policy implemented at the PHC level in Oyo State, Nigeria, which demonstrates that integration is administratively possible. The review concludes with policy, workforce, service delivery, information systems and research recommendations which are proposed to enable Nigeria shift from being a purely and exclusively formal sector based approach to occupational health to a truly national approach, and to build the case for Universal Health Coverage, as well as a phased implementation plan to this development.

Keywords: occupational health; primary health care; basic occupational health services; informal sector; health policy

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1. Introduction

Occupational health is the public health specialty responsible for prevention of workers' injuries, disease and promotion of workers' physical, mental and social wellness. Primary health care is, in principle, the channel through which they are to reach the population: it is normally the point of first contact of people with the health system and the Alma-Ata Declaration of 1978 states clearly that the focus of primary health care is on health care delivered "as close as possible to" people. In Nigeria, occupational health has been a development that has taken place mostly off this platform. Formal occupational health provision has only developed as a part of large employers such as oil and gas companies, manufacturers, and a few multinational companies, and is regulated by provisions, mainly in the Factories Act, which affect registered factory premises instead of the workers overall. Nigeria's vast workforce lacks a formal pathway to any type of workplace health care. This is no marginal gap. It affects most of the nation's labor force and has a direct impact on morbidity, disability, productivity and the journey towards achieving health coverage for all in Nigeria.

This paper enfolds two interrelated tasks. Firstly, it is a narrative (or literature) review that brings together the evidence from all over the world on the integration of basic occupational health services within primary care, using the WHO/ILO concept of basic occupational health services and country experience of the seven countries of Europe, Latin America, Southeast Asia and Southern Africa. Second, it is a policy analysis that explores and compares the current legal and policy framework for occupational health in Nigeria with the WHO/ILO standards, document areas of silence in current legislative/regulatory framework, and assesses a recent subnational policy that addresses primary care, as an exemplar of feasibility. The idea is to take the discussion far from the general argument about the subject of integration and get to a set of specific, evidence-based policy directions for Nigeria.

2. Methods

This is not a systematic review but narrative. The terms used through targeted search of the authors across PubMed, Google Scholar and institutional repository (WHO, ILO, National Bureau of Statistics/UN, Federal Ministry of Labour and Employment) were occupational health, primary health care, basic occupational health services, informal sector, and Nigeria, with name of comparator countries. The Nigerian Government policy, documents and legislative were sourced directly from the official sources, that is, the Federal Ministry of Labour and Employment, National Policy on Occupational Safety and Health, 2006. The country comparators were selected not exhaustively, but rather carefully chosen to represent four systems of health financing with different characteristics: a high-income system based on statutory employee financing (Finland), a middle-income system based on universal public financing (Brazil), a middle-income system with an explicit primary care programme for informal workers (Thailand), and a collection of low income systems from Sub-Saharan Africa, structurally close to Nigeria (The SADC Zambia, Malawi, Mozambique and Lesotho). Due to the narrative nature of the review, a synthesis that covers the breadth of relevant policy experience is favored rather than a systematic review of the effectiveness of interventions. Findings are intended to be read as an evidence-based argument, not as a formal systematic evaluation of the effectiveness of an intervention.

3. Basic Occupational Health Services

3.1 Concept of Basic Occupational Health Services

Basic Occupational Health Services (BOHS) were originally proposed by the World Health Organization (WHO) and the International Labour Organization (ILO) as a feasible approach to providing the minimum level of occupational health services to all workers, in particular to workers in the underserved sectors and to workers in resource-limited settings. However, BOHS is not conceived in the same way as the traditional occupational health services that are seen in large enterprises with their own occupational health professionals, but rather builds on the provision of universal access to a basic package of occupational health interventions independent of enterprise size, employment status and geographical location (Rantanen, Lehtinen, & Valenti, 2014; WHO 2007).

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As per WHO and ILO, BOHS covers a set of services which are preventive, promotive, curative, and rehabilitative and are essential to protect workers from occupational hazards, and to promote health in the workplace, to detect ill health at an early stage, and to facilitate timely referral where necessary for specialist care (WHO, 2007; Sinha et al., 2014). BOHS is a reflection of the progressive environment of occupational health from an industrial focus towards a more public health focus with an aim towards health equity and universal health access. Until the Industrial Revolution, occupational health services developed mostly in large industries with the aim of avoiding injuries and diseases among factory employees. This was a successful model in well-structured industrial jobs, but the model failed to include millions of people who are working in agriculture, small-scale enterprises, and informal jobs (WHO, 2007). The Alma-Ata Declaration of 1978 took a leap forward to the recognition of primary healthcare as fundamental to the strategy for fair social, health and drug distribution and that essential healthcare should be available to all populations. While occupational health was not written into the acceptance, the principle, "bring health care as close as possible to where people live and work," was a philosophical underpinning to embedding occupational health into primary healthcare (WHO & UNICEF, 1978). Six critical tasks are identified by the World Health Organization (WHO) and the International Labour Organization (ILO) and make up Basic Occupational Health Services (BOHS) including Occupational Health Surveillance. Health Promotion/Disease Prevention, Early diagnosis and basic clinical management, Rehabilitation/Return-to-Work and Support Occupational Health Information Systems. Although its components may be adapted in various countries based on available resources, the basic elements are fairly uniform and are intended to make sure that all workers have access to the health services they need during their work life (World Health Organization [WHO], 2007; Rantanen et al., 2014; Sinha et al., 2014).

3.2 Relevance of BOHS in Nigeria

The BOHS framework is definitely relevant to Nigeria since the national occupational health system is chiefly concentrated for the labourers working in the formal sector, leaving the workers engaged in the informal labour market with the large populace with lesser regulation and access to occupational health services. The use of BOHS in Nigeria primary health system represents a opportunity of expanding basic OH services to target groups that lack such services without setting up a parallel service environment. There are already day-to-day occupational history taking services in primary healthcare facilities available in communities and these institutions offer a strategic opportunity for the integration of workplace hazard identification, health education and the early detection of occupational diseases, as well as referrals for complex cases. This integration would boost disease prevention, occupational health monitoring and support Nigeria's progress on Universal Health Coverage and health system strengthening.

4. The Occupational Health Situation in Nigeria

The dimensions of the challenge can be appreciated with the help of understanding the structure of Nigeria's labour market. The national labour force data for the last few years always indicated that most of the populace involved in the Nigeria labour force was in the informal sector. Recent analyses by the National Bureau of Statistics (NBS) based on national figures estimate informal employment at about 92-93% of the labour force by 2023-2024 (National Bureau of Statistics, 2023, 2024); and earlier estimates by World Bank place informal employment at no more than 80% of the workforce (World Bank, 2021), depending on definition and survey round. Women, persons living in rural areas and persons with disabilities have higher rates of informality than the rest of the population. In Nigeria, informal work refers to street vending, informal craft occupations, small-scale agriculture and farming; incorporating commercial motor transport as well as micro-enterprises and usually comes with occupational exposures involving direct physical, chemical, ergonomic, and psychosocial hazards, which are not covered by the occupational health legislation at all. It is what is informally happening that overlaps with a health system that is also undergoing a lot of stress. The physician density has been estimated at about 0.29–0.36 per 1000 in Nigeria which is a fall short of WHO recommended desired ratio, and the country is experiencing a significant shortage of trained health workers as an estimated national deficit of several tens of thousands of physicians by 2030 is partly attributed to emigration of health workers. Migratory workers in Nigeria lack occupational

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health support staff, which are limited in number and are limited in their distribution, being mostly in urban centres, particularly in Lagos and Abuja. The implication of this is that contemporary occupation workers in Nigeria, who include millions of workers engaged in the construction industry, mining, agro-processing and informal manufacturing, do not have realistic access to the services of the occupational physician or occupational health nurse. In turn, reports of occupational injury and disease are poor, formal sector enforcement is sporadic and there is no regular process to identify work related illness at the first point of contact.

5. Nigeria's Existing Occupational Health Policy Architecture

In order to start the integration policy analysis, one has to begin from what is already in place. The current framework for occupational health and safety in Nigeria is based on a number of instruments, of which none has any significant impact on primary care level.

I.The workplace safety and health legislation in Nigeria is the Factories Act (Cap F1, Laws of the Federation of Nigeria, 2004) which only covers registered factory premises and where it provides protection is restricted from informal enterprises, agriculture and self-employment.

II.The National Policy on Occupational Safety and Health (2006) was adopted, in implementation of the ILO Convention No. 155 on Occupational Safety, Health and Working Environment, which was ratified in 1994, and is set within three thrusts: workplace inspection, hazard prevention, and medical surveillance of formally employed workers, under the Federal Ministry of Labour and Employment's Occupational Safety and Health Department.

III.Section 17(3)(c) of the Constitution 1999: Establish that the health, safety and welfare of persons in employment is protected (not implemented in PHC policy).

IV.Compensation for occupational injury and disease is contained within the scope of the a compensation delivery/prevention mechanism in the form of the Employees' Compensation Act (2010) and is still limited to formally employed people.

V.A new Labour, Safety, Health and Welfare Bill (2012) is proposed to repeal and update the Factories Act with a wider protection. The Bill has not been assented and has not come into force.

The current legal landscape in Nigeria is a factory-based approach to occupational health that is generally applicable only to the formal sector and not the informal sector; this approach were embedded in the WHO/ILO Basic Occupational Health Services framework and was the explicit call to make occupational health to be integrated into primary health care and extended to informal and self-employed workers. It does not contain any primary-care aspects, nor does it have a set bundle of occupational health tasks defined for PHC staff, and no systematic data exchange between the labour and health information systems. This corresponds to the findings of the Global Plan of Action on Workers Health in 2008/2009 baseline survey: Only a small fraction of the world's institutions/services had a presence in the occupational health sector for primary prevention, with the lacks of coverage concentrated in the countries and groups of workers represented by the informal sector in Nigeria.

Table 1: Comparison of WHO/ILO Basic Occupational Health Services Standards and the Current Occupational Health System in Nigeria

WHO/ILO BOHS Standard	Current Situation in Nigeria	Identified Gap	Policy Implication
Universal occupational health coverage	Services concentrated in formal industries	Large	Expand coverage through PHC
Occupational history during routine consultations	Rarely documented in PHC	Large	Incorporate occupational history into PHC consultations
Workplace hazard identification	Limited to regulatory inspections	Large	Train PHC workers in basic hazard assessment

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Occupational disease surveillance	Weak reporting system	Large	Integrate occupational indicators into DHIS2 and HMIS
Occupationalhealth education	Limitedcommunity programmes	Moderate	Strengthen community health promotion
Referral pathway for occupational diseases	Poorly coordinated	Moderate	Develop standardized referral protocols
Informal sector coverage	Very limited	Large	Extend BOHS through community-based PHC services
Occupational health workforce	Inadequate specialists	Large	Build PHC workforce capacity through BOHS training
Intersectoral collaboration	Fragmented	Moderate	Establish national BOHS coordination mechanism
Monitoring and evaluation	No standardized BOHS indicators	Large	Develop national BOHS monitoring framework

Source: Adapted from WHO (2007), Rantanen et al. (2014), and the authors' synthesis of the reviewed literature.

6. Why Occupational Health Should Be Integrated into Primary Healthcare

Accessibility: By design, PHC facilities have the widest access to support the health of communities that specialist occupational health services never will. When a peri-urban/rural informal worker accesses the health system it is likely it is through the PHC clinic, and not through an occupational health centre.

Early detection: Some occupational conditions, such as occupational asthma, other pneumoconioses (such as silicosis), noise-induced hearing loss, musculoskeletal disorders, occupational dermatoses and pesticide poisoning, are more likely to be amenable to intervention when identified early. Doctors who have seen patients frequently may be able to catch these disorders in the pre-intervention or pre-treatment stages.

Prevention: PHC platforms have already been well established in regard to the provision of preventative services including health education, immunization and screening. These same sites could be expanded to workplace prevention: basic risk communication, awareness of the need for PPE, basic risk assessment of small workplaces and/or basic health surveillance for known hazards in the immediate community.

Equity: Most informal-sector workers are almost entirely not covered by employer-based occupational health back, making the process of integrating PHC into the OHP a crucial intervention in the field of equity. In rural southern Thailand, a cross sectional study of informal labourers revealed that the accessibility of cognitive OHS in rural health centers in the community was directly related to health status, especially for those in the lower income group, and led to a proposal for integration and active management of cognitive OHS in primary care services rather than through specialized services.

7. Comparative Country Experience

Nigeria is not the first country to face the issue and therefore there are no templates for their replication, only reference points derived from international experiences. The comparison below outlines four health systems which have established a link between occupational health and primary health care and identifies what can be transferred to the Nigerian context.

Table 2: Comparative Analysis of International Models for Integrating Basic Occupational Health Services into Primary Healthcare and Their Relevance to Nigeria

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Country	Model	Legal / policy basis	Coverage mechanism	Relevance to Nigeria
Finland	Employer-funded statutory occupational health care, delivered by dedicated occupational health providers rather than general PHC.	Occupational Health Care Act (1383/2001); preventive services compulsory for every employer regardless of firm size.	Universal for employees in a formal employment relationship; state (Kela) reimburses employers for a share of costs.	Demonstrates the conceptual origin of Basic Occupational Health Services, but its employer-financed, formal-sector design has limited direct transferability to a labour market that is over 80% informal.
Brazil	Workers' health integrated into the public Unified Health System (SUS) through a dedicated national network (RENAST) and referral centres (CEREST) linked to primary care teams.	National Policy for Workers' Health (2004); RENAST established 2002; incorporated into SUS structure 2009.	Public and universal in principle, delivered through the Family Health Strategy and matrix-support arrangements between CEREST specialists and primary care teams.	Closest model to what integration could look like in Nigeria: a specialist referral layer (CEREST) supporting, rather than replacing, primary care teams. Nigerian literature also notes persistent gaps between policy and routine practice.
Thailand	Basic Occupational Health Services embedded in existing Primary Care Units (PCUs), targeted specifically at informal and small-enterprise workers.	Ministry of Public Health BOHS project launched 2004 by the Bureau of Occupational and Environmental Diseases, developed through defined phases with ILO support.	PCUs cover almost all communities; service depends on trained PCU staff and functioning links to local leadership and worker groups.	The most directly comparable precedent for an informal-sector-majority country: evidence shows OHS access through primary care is associated with better health status among

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Country	Model	Legal / policy basis	Coverage mechanism	Relevance to Nigeria
				informal workers, but service provision remains uneven and depends on local implementation capacity.
Southern African Development Community (Zambia, Malawi, Mozambique, Lesotho)	Assessed integration of occupational health services (OHS) into primary health care institutions across four SADC countries.	No unified statutory framework; integration assessed against WHO/ILO Basic Occupational Health Services principles.	Uneven: most facilities report offering health promotion and rehabilitation services, but there are gross inadequacies in access to OHS and a shortage of qualified occupational health personnel.	A close structural analogue to Nigeria: comparable resource constraints, comparable workforce shortages, and comparable reliance on general PHC staff rather than specialists.
Nigeria (current state)	Formal occupational health services largely confined to company clinics in large enterprises (oil and gas, manufacturing); no defined occupational health function within PHC nationally.	National Policy on Occupational Safety and Health (2006); Factories Act (Cap F1, LFN 2004); Employees' Compensation Act (2010); ILO Convention 155 ratified 1994; 1999 Constitution, s.17(3)(c). No PHC-level occupational health policy exists at federal level.	Confined almost entirely to the formal sector; over 80% of the workforce, concentrated in informal and agricultural work, has no defined route to occupational health services.	A single subnational precedent exists: Oyo State's Primary Health Care Board has developed Nigeria's first occupational health policy for PHC workers, developed with WHO-template guidance and workforce training, offering a template for national scale-up.

There are two main findings from this comparison that are significant for Nigeria's policy decisions. Two of the observations from this comparison are relevant to Nigeria's policy choices. Secondly, the Thailand and

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SADC experiences reveal that introducing primary-care-based occupational health for informal workers within resource-poor contexts is feasible, but the actual services provided are patchy and strongly rely on the provision and quality of local trainings, budgets and referral opportunities; only two out of the 10 primary-care units studied in north-eastern Thailand actually provided occupational health services, citing limited policy and budget support as the primary hurdle to implementation. Second, the Brazilian model offers a workable division of labour whereby specialist centres (CEREST) provide technical support and training to primary care teams rather than making a bid to provide all the occupational health services alone, an approach which Nigerian policy could implement, given that it has few specialist occupational health staff members.

8. Barriers to Integration

The fact that integration has not yet happened nationally in Nigeria can be attributed to several structural constraining factors, any possible policy intervention must tackle such factors directly.

I.Along with the general health workforce deficiency of 50,000+ doctors by 2030, Nigeria is also facing a workforce shortage in the field of occupational health consisting of very few trained health workers, largely confined to several urban centres.

II.Less awareness and dedicated allocation of public funds for health generally, and of occupational health as a specific budget line in PHC funding.

III.Previous studies indicate that very few or no occupational history takers are prepared in PHC programmes, as the knowledge of hazards, so prevalent in pre-service programmes, is omitted from most.Newer research revealed that being trained in occupational history-taking, hazard recognition, was a highly concealed stream of skills in PHC programmes, only undertaken by the Oyo State project in one single state for one successive cohort of workers.

IV.Poor reporting of occupational injuries and diseases and no specific system to routinely collect occupational variables in primary care registers was observed, similar to the findings of the data-integration problems reported even with RENAST's more advanced system in Brazil.

V.There is no linkage between national policies for occupational health and the national PHC policy framework despite the fact that it is only encountered in the context of labour and factory laws (formal sector).

VI.Poverty of occupational health awareness of employers, especially in small and micro-sized businesses.

VII.The informal economy is vast, fluid and variegated and any single delivery model of the workplace is challenging to be implemented at a sector and/or regional level.

9. Discussion

9.1 Interpretation of the Findings

This review shows that the provision of Basic Occupational Health Services (BOHS) in Nigeria's primary healthcare (PHC) system is a public health imperative and is an achievable policy option. Occupational health services continue to be mostly confined to the formal sector where informal workers dominate Nigerian workforce, despite the efforts made towards the development of occupational health services for informal workers (NBS, 2024; ILO, 2024). This gap underscores the need to transition from the model of dealing with occupational health focally as part of the workplace towards a population-based approach that can be managed through PHC, in accordance with the principles of Universal Health Coverage (WHO & ILO, 2021).

It was also observed that while the current occupational health policy in Nigeria focuses on regulation of the working environment, it is inadequate in terms of delivery of occupational health services through the health system. This is reflected by the difficulties in integrating occupational health into routine PHC services, which not only hinder opportunities for prevention and early diagnosis but also limit opportunities for surveillance and continuity of care. But the problems of coordinating institutions and getting access to occupational health services (OHS) are shared by other LMICs where governance issues remain fragmented (Tumwesigye et al., 2020; Weel et al., 2023).

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It is important to emphasize that the philosophy of BOHS is very similar to principles and practices of PHC. Equality, accessibility, community engagement, and integrated service delivery, along with prevention are central elements of both (WHO & UNICEF, 2018; Rantanen et al., 2014). Incorporating BOHS in PHC, therefore, is not a replacement of a health programme but an extension of the already established functions of PHC.

9.2 Lessons from International Experience

There are many examples of countries implementing BOHS which are not wealthy, and it is effective governance, workforce capacity and integration into existing health systems which drive BOHS success. Examples, such as Finland's robust legislation and institutional investment, and Brazil's specialist occupational health services that are involved in supporting PHC in the referral of cases, highlight the need to back PHC. Thailand is perhaps the most relevant experience to showcase as an integrated approach to BOHS in primary care for the majority of workers who have predominantly informal work, while the experiences learnt from countries in Southern Africa reveal the challenges of having limited numbers of trained staff, poor surveillance and low levels of funding in resource-poor environments, respectively (Rantanen et al., 2014; Siriruttanapruk & Praekunatham, 2022; Tumwesigye et al., 2020).

The experiences indicate that a context specific BOHS approach emphasizing PHC service delivery needs to be integrated with the provision of specialist referral, occupational health workforce development and enhanced occupational health surveillance in Nigeria.

9.3 Policy and Practice Implications

The study recommends that the incorporation of BOHS into PHC will enhance Nigeria's bid to realize UHC in improving access to occupational health services, especially in informal sector. To achieve this goal, occupational health should be integrated into and supported by the following: PHC policies, service delivery guidelines, health worker training programmes, and regular health information systems. Robust intersectoral partnership between health, labour, training and regulatory authorities, academic institutions and professional organizations will also play a crucial role in enhancing effectiveness of implementation (WHO & ILO, 2021).

Integrating occupational health into PHC is possible in the Nigerian context and the Oyo State programme is a good example. As of yet, it is restricted to a small number of states and highlights what is possible at the state level for lessons learned for national implementation (Society of Occupational Medicine, 2024).

9.4 Conceptual Framework

The proposed framework suggest the incorporation of BOHS into Nigeria's basic health care system (PHC) as a way of strengthening the health system. It provides a guide demonstrating the linkages between governance, inputs to the health system, service delivery, stakeholder engagement, and anticipated outcomes. A framework's premise and starting point is that achieving success in integration starts at policy and governance, by building the regulatory environment, financing structure, and guidelines for BOHS through national and subnational institutional processes.

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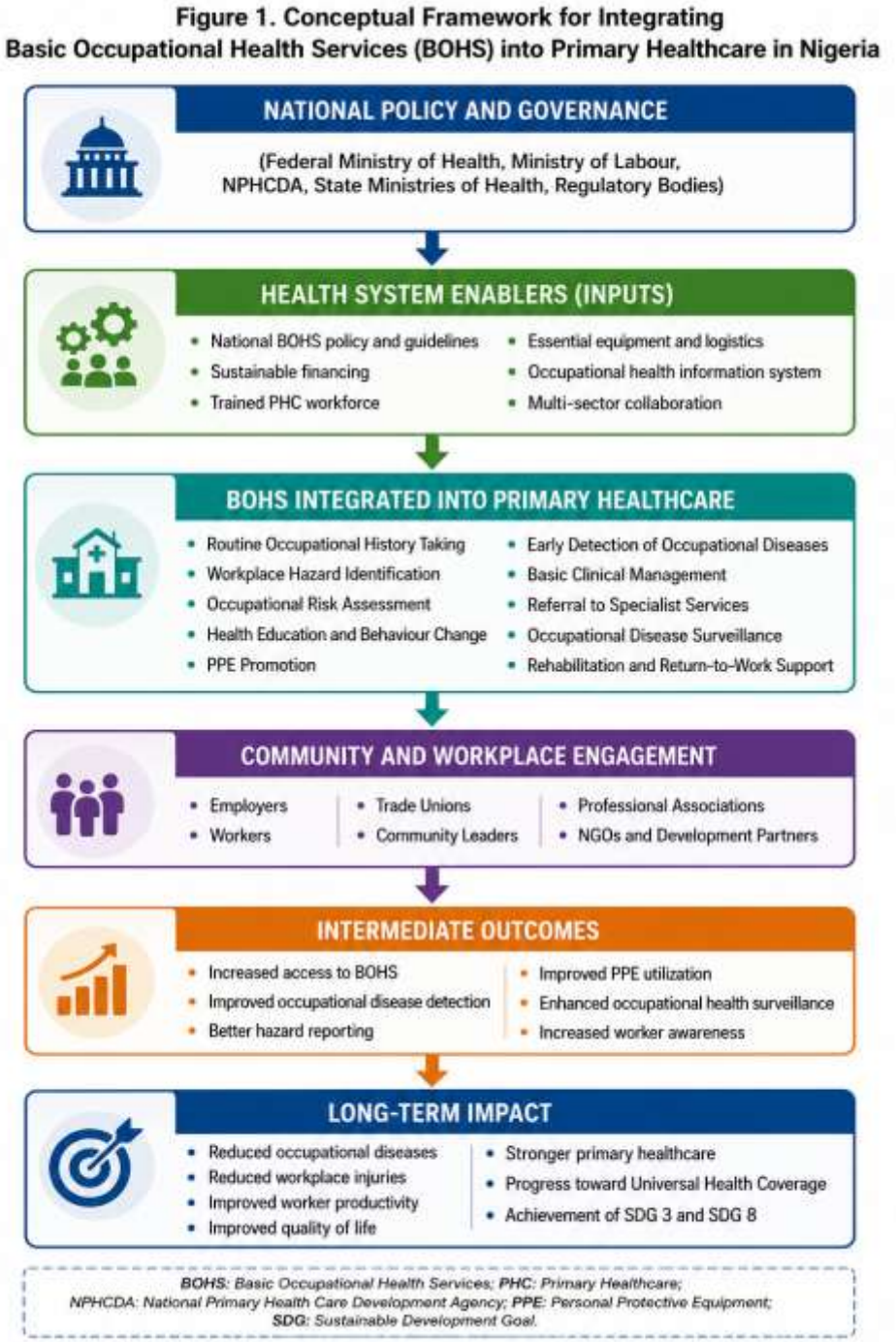

Figure 1. Proposed conceptual framework for integrating Basic Occupational Health Services (BOHS) into Primary Healthcare (PHC) in Nigeria.

These governance mechanisms help facilitate vital health system enablers, such as multisectoral collaboration, occupational health information systems, financing, and workforce capacity. These facilitators help to integrate BOHS into existing or integrated PHC services. The core components of the services are an occupational history taking, identification of workplace hazards, risk assessment, health education, promotion of personal protective equipment, early diagnosis and management of occupational diseases, referral services, surveillance and rehabilitation. Community and workplace engagement is a cross

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cutting element, as there are important roles for employers, workers, trade unions, community leaders, professional associations and development partners when it comes to occupational health promotion and supporting implementation. The effective implementation is expected to lead to better access to occupational health, better surveillance, better occupational disease detection, better awareness of occupational hazards, and better occupational practice. Overall, these enhancements help place importance on prevention of occupational morbidity/injury, productivity, primary healthcare strengthening and work towards universal healthcare coverage (UHC) and sustainable development goals (SDGs) pertaining to good health (SDG 3) and decent work (SDG 8).

The framework makes a distinction between policy and governance, health system enablers, BOHS services delivery in PHC, community and workplace engagement, intermediate outcomes, and long-term public health impacts. It is based on the WHO Health Systems Framework, WHO Framework on Integrated People-Centred Health Services, the WHO Global Plan of Action on Workers' Health (2008-2017), the Basic Occupational Health Services (BOHS) model proposed by Rantanen et al. and adapted for the context in Nigeria.

The introduction of Basic Occupational Health Services (BOHS) into Nigeria's Primary Healthcare (PHC) system, provides a transformative path that can enhance health service delivery, preventive strategies for occupational diseases (OD), and the progress of Universal Health Coverage (UHC). The important conclusion from this review is that although a number of policies have been written in Nigeria on occupational safety and health, on strengthening health systems and finally on primary healthcare, these are not well harmonised and implemented, with very little occupational health services outwith formal employment and specialist facilities. A significant percentage of workers, especially those working in small-scale and informal sectors, agriculture and construction, are therefore still not accessing basic occupational health services.

Experience from Finland, Brazil, Thailand and South Africa shows that to implement occupational health programmes as an integral part of PHC, the necessary governance, skilled and quality development of the workforce, financial and surveillance systems all make sense. Industrial health must not remain an isolated specialty but part and parcel of regular primary care, as these countries simply demonstrate! In both contexts, however, the capacity of frontline individuals in the health care sector was key to successfully implementing the policy, and involved ensuring their capacity to identify occupational diseases, to make a risk assessment and establish referral pathways to provide specialist care.

For Nigeria, there are interesting opportunities to do such a thing. The country has one of the biggest PHC networks in sub-Saharan Africa which enable BOHS delivery without establishing parallel service structures. The merging of occupational history taking with hazard assessment in the workplace, health education and workplace surveillance of occupational diseases into the day-to-day service delivery of PHC has the potential to transform early diagnosis of work-related diseases, increase workplace coverage, and substantially reduce the burden of work-related disease.

There are health system challenges, however, that are not to be underestimated. Issues including a lack of skilled workers, poor funding, lack of diagnostic equipment, low quality health information systems and limited resources for other health areas including maternal and child health, infectious diseases, and non-communicable diseases persist at many PHC facilities. Such restrictions indicate that BOHS integration should be implemented as a methodology that is a gradual process and not as a one-off programme. Incorporating occupational health into current PHC services with gradual implementation of occupational health training for the PHC workforce and policy changes is likely to create more sustainable health care system changes than the creation of stand-alone occupational health services.

10. Implementation Roadmap for Integrating BOHS into Primary Healthcare in Nigeria

Phased and coordinated implementation strategy is necessary for successful integration of BOHS into Nigeria's PHC system. The evidence considered and international experience points suggest a roadmap with four phases (Figure 2).

Phase I: Policy Development and Institutional Strengthening (Years 1–2)

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This should be done first by developing a policy environment that is conducive. The Federal Ministry of Health in conjunction with various professional bodies, NPHCDA and Federal Ministry of Labour and Employment should formulate National Guideline for the implementation of BOHS as part of an existing National PHC Policy. National systems must make sure that the field of occupational health is included in the definition of PHC services, health package and health sector strategic plans.

Priority activities include:

I.Creation of national implementation guidelines for BOHS.
II.Work on revision of occupational health legislation.
III.A national BOHS coordinating committee is established.
IV.Strategic partnerships between the national health systems and occupational health stakeholders.

Phase II: Capacity Building and Pilot Implementation (Years 2–4)

The second stage will be enhancing the capacity of the PHC team to provide BOHS. Personal health skills should be integrated into pre-service training for doctors, nurses, community health officers, community health workers/extension workers, environmental health officers and other frontline health workers. In-service training programs must also be created to enhance occupational history taking skills and recognition of occupational diseases along with the referral procedures.

Pilot implementation should begin in specific state(s), with a wide spectrum of occupational environments, such as urban/peri-urban, industrial, rural, and agricultural areas.

Key activities include:

I.Provision of national training programmes for BOHS.
II.Training of PHC workers.
III.Allows occupational history forms to be introduced.
IV.The supply of adequate occupational health machinery.
V.Setting up referral links with secondary and tertiary levels.

Phase III: Scale-Up and Health System Integration (Years 4–6)

BOHS could be replicated and increasingly be mainstreamed in regular PHC service delivery across the country following the accomplishment of the pilot implementation. In addition, occupational health should be incorporated into the practice of routine consultations, maternal and child health services (as appropriate), as a dimension of chronic disease management, environment health programmes and outreach in the community.

At this stage, consideration should be given to integrating eHIS to include occupational factors to focus on the health of different occupations, work setting and workers, including work-related diagnosis, and enhance surveillance at the national level.

Priority activities include:

I.Widespread roll out of BOHS services.
II.Fit within regular routines in PHC quality assurance programmes.
III.Increase in surveillance for occupational disease.
IV.Community awareness campaigns.
V.Work together with employers and employee groups.

Phase IV: Monitoring, Evaluation, and Continuous Improvement (Years 6–10)

Monitoring and evaluation shall be a continuous process for long term sustainability. Progress in implementation, service use, detection of occupational illness and injury, rates of referral and workforce capacity, health outcomes should be measured using national measures. The persistence of the programme evaluation process should inform the evolution of the programme policy and allocations of resources.

Research institutes and universities should partner with government agencies to assess programme effectiveness, implement programme research and produce evidence to help improve programmes on an ongoing basis.

Table 3. Proposed Phased Roadmap for Integrating BOHS into Primary Healthcare in Nigeria

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Phase	Timeline	Major Activities	Lead Institutions	Expected Outputs
I	Years 1–2	Policy development, guidelines, governance	Federal Ministry of Health, Ministry of Labour, NPHCDA	National BOHS policy and implementation guidelines
II	Years 2–4	Workforce training, pilot implementation	State Ministries of Health, PHC Boards, Universities	Trained workforce and successful pilot sites
III	Years 4–6	National scale-up, surveillance, community engagement	Federal and State Governments	Routine BOHS services within PHC
IV	Years 6–10	Monitoring, evaluation, implementation research	Government, Universities, Research Institutes	Sustainable BOHS programme with continuous improvement

11. Conclusion

Nigeria's occupational health deficit is fundamentally about coverage — most workers are working in the informal sector, and current Nigerian occupational health legislation and policy are designed for the formal sector, refusing to engage the informal sector. Primary health care is the one platform already poised to address these workers and Nigeria has already a proof of concept in the Oyo State PHC policy for occupational health. While comparative experience from Finland, Brazil, Thailand and the SADC region illustrates the things that can be achieved (Primary-care based occupational health can measurably improve health status among informal workers), it also illustrates the challenges (Training is not enough: Without continuing policy and budget support, Primary-care based occupational health will not be implemented). Incorporation of the basic package of occupational health functions (Early detection, prevention, referral and routine data capture) into PHC does not involve creating a new health system from scratch, but rather intentionally extending, training and resourcing the existing health system. This is not a panacea for Nigeria's problem of occupational ill-health, and will never replace the need for improved regulation, compliance or investment in specialist occupational health capacity. As a potential next step, however, with a domestic precedent and significant amount of comparative evidence, it provides a plausible first step toward better early detection, greater access to care, and actual strides toward universal health coverage for Nigeria's workers.

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