Assessing service providers’ satisfaction with the chronic diseases package provided through the National Health Insurance Fund in Sudan

Wael A. Fakihammed¹, Rehab A. Hussien¹, Zohal B. Ahmed Atbara¹, Shiraz O. Higaz¹, Ashwag A. Mirghani¹, Osama E. Sir Elkhafim ², Moneer A. Abdalla² and Almoeiz Y. Hammad ²*

¹ National Health Insurance Fund (NHIF), Sudan
² Public Health Institute (PHI), Federal Ministry of Health, Khartoum, Sudan

Abstract

Background: The prevalence and burden of chronic diseases is growing significantly with direct impact on health and financial security of population. In Sudan, there is a continuous effort to improve access for good and integrated health services but still the utilization of these services is low. Therefore, there is an urgent need to assess the availability and integration of benefit packages to ensure better and effective coverage of services.

Aim: This is a descriptive cross sectional study aimed to assess the opinion of service providers about the chronic diseases package provided through the national health insurance fund.

Methods: Form390 participating, data was collected via closed ended standardized questionnaires. Pretesting was done to ensure quality survey instruments and fieldwork procedures were conducted. A structured questionnaire with closed-ended questions was developed based on literature and previous studies. The questionnaire made up of 30 questions and organized in the following sections: background characteristics, medical characteristics, health professionals’ knowledge and practice related to NHIF 'chronic diseases package and perception about NHIF 'chronic diseases package.

Results: Our results showed that despite the existence of a number of issues, the National Health Insurance Fund is rather accepted amongst our respondents. Issues manifested were in regards to health education and supply issues of drugs.

Conclusion: Our study concluded that, there is an obvious weakness in both training of providers and implementation of protocols for chronic diseases. Moreover, despite the challenges of drug availability, 70% of our participants expressed positivity when questioned about the presentation of the drug package, bearing in mind the importance of reviewing the list to ensure its inclusion of new items.

There is a need for training medical providers about chronic diseases with more focus on health promotion and application of national guidelines. Additionally, integration of chronic diseases services in necessary for achieving universal health coverage.

Keywords: national protocols for chronic diseases, national health insurance fund, health promotion

1. INTRODUCTION

1.1. National Health Insurance Fund, Sudan

Sudan is a lower middle income country, which spends about 6.5% of its Gross Domestic Product (GDP) and 8.2% of the general government expenditure on health. Out-of-pocket share is about 70% (US$64.0 per capita) while the general government health expenditure represents only 22.3% (US$26.9 per capita) [1].

The National Health Insurance Fund (NHIF) was implemented in Sudan in 1997 as an attempt to overcome the problem of accessibility [1]. By the end of 2021, NHIF covered more than 36 million Sudanese citizens (89.6%) of target population. About 72% of the insured population are poor families representing the largest share of the insured population followed by public sector which represent 9.8%, informal sector 8.1% while the reaming are pensioners, private and students which represent 2.4%, 1.3% and 4.7% respectively[1].

The Ministry of Finance is the major contributor in financing NHIF (72% of funds), followed by the parastatal organizations (12.7%), while households’ contribution is lower (9%). The level of the current households’ contribution was described as far less than it should be, thus impacts the sustainability and the goal of achieving universal coverage. The formal sector contributes 10% of the employees’ salaries, which is deducted at source, 4% from the employee and 6% from the employer. For the informal sector, households pay a monthly flat rate [1].

Regarding health service delivery system, and despite of the strong political support, wide range of benefit package and the joint work with ministries of Health at federal and state levels, but still there are many challenges that faced improving accessibility and ensuring sustainable services provision especially in rural areas. The main challenges are shortage of staff, insufficient finance, lack of integration of services and fragmentation of health information system [1].
1.2. Chronic diseases

A chronic condition is a human health condition or disease that is persistent or otherwise long-lasting in its effects or a disease that comes with time. The term chronic is often applied when the course of the disease lasts for more than three months. Common chronic diseases include diabetes, arthritis, asthma, cancer, and chronic obstructive pulmonary disease, Lyme disease, autoimmune diseases, genetic disorders and some viral diseases such as hepatitis C and acquired immunodeficiency syndrome. An illness which is lifelong because it ends in death is a terminal illness. It is possible and not unexpected for an illness to change in definition from terminal to chronic. Diabetes and HIV for example were once terminal yet are now considered chronic due to the availability of insulin for diabetics and daily drug treatment for individuals with HIV which allow these individuals to live while managing symptoms (2).

One of the major leading causes of morbidity and mortality worldwide are the non-communicable diseases (NCDs). Which in the low- and middle-income countries has higher rates. Non-communicable diseases in 2010 caused death for 38 million (68%) which represented about (82%) of premature deaths over the world. A projection for the upcoming 10 years done by the World Health Organization for the globally increase of NCDs deaths is 17%. In the Eastern Mediterranean region (EMR) will be (25–27%), which constitute the second major increase, now in the most countries the age-standardized death-rate is over 300 per 100,000 that have high burden over the health system (3).

The burden of chronic diseases is growing significantly. Moreover, due to the chronic nature of these diseases, most patients were under the poverty line due to the high and continuous demand for healthcare (4).

In Sudan, chronic diseases account for 52% of all deaths. The risk of premature death between 30-70 years in Sudan was reported to 26% with a gender variation between males (28%) and females 24% (5). Moreover, Sudan stepwise survey 2016 showed that, the national prevalence of raised blood pressure (RBP) was 31.5%. The serious findings was among participants with RBP who are not currently on medication where the highest reported from Darfur (93.2%) and Kordofan (92.0%) regions, while the lowest was reported from Khartoum region (76.5%) (6).

Within NHIF context, chronic diseases represent about 18% of the total annual visits. Hypertension and diabetes are the main types of diseases which represent around 40% for each (7). An interesting notice is that there is a clear discrepancies over states in term of utilization of services among chronic ill cases where the highest percentage in Northern (32%) , Gezira (29%) and River Nile (23%) states while the lowest percentage was reported from Darfur states which usually less than 3% out of the total visits (7,8,9).

Study done in South Darfur for three of non-communicable diseases (Hypertension, Heart disease, and Diabetes) in National Health Insurance Fund context, the study used secondary data for the year 2017 and revealed that these diseases has significant financial burden on NHIF and this may be due to concentration in management of these diseases and little attention to prevention strategies.

Case study of In-depth perspective of healthcare providers using an integrated chronic disease management (ICDM)model in seven selected primary health care (PHC) facilities in South Africa to assess the quality of care for non-communicable diseases (NCDs) showed gabs in structure like malfunctioning of blood pressure machines and staff shortage.

Cross-sectional study was healed in Cape Town for NCDs at 30 PHC facilities.14 health professionals were interviewed and they revealed shortage in resources, like time, space and equipment staff shortage turnover. The most important findings of this study were the indication of health providers about the importance of workshops and group meetings in reminding them of the importance of their roles in patient education and empowerment. Also the study revealed that despite of many designated promotion materials and guidelines, awareness and presence of these materials was limited.

A qualitative study done in Palestinian for 30 healthcare providers from three main public hospitals in Gaza using semi-structured topic guide, and the focus group interviews for perceptions of non-communicable disease and war injury management, the study showed that there was hospital infrastructure and logistics shortage and unused of updated clinical guidelines.

Perceptions of policy-makers and health providers in Sierra Leone a cross-sectional approach, using primary and secondary data, showed ineffective feral pathways especially down referral which was marginally better in rural than urban areas.

In a study from Thailand, the PHC providers showed that strong health infrastructure, competent staff, essential medicines will strengthening their capacity to address treatment of chronic diseases (10).

Study conducted in Sir-lanka where primary health care providers reflect the insufficient knowledge and training about preventive measure to control and improve the quality of chronic diseases management (11).

The aim of this study was therefore to assess the opinion of medical providers about the availability, integration and comprehensiveness of NHIF package for chronic diseases so as to come up with the required intervention to ensure better effective coverage for this target group.

2. MATERIALS AND METHODS:

This is a descriptive cross sectional based study. An analytical cross-sectional study was conducted, in all Sudan states except Khartoum. The study was carried out from December 2021 to February 2022. Participants agreed to participate in the research were recruited according to inclusion and exclusion criteria. Sudan, officially the Republic of the Sudan, is a country in Northeast Africa. It shares borders with the Central African Republic to the southwest, Chad to the west, Egypt to the north, Eritrea to the northeast, Ethiopia to the southeast, Libya to the northwest, South Sudan to the south and the Red Sea. It has a population of 45.70 million people as of 2022 and occupies 1,886,068 square kilometers (728,215 square miles), making it Africa’s third-largest country by area, and the third-largest by area in the Arab League. It was the largest country by area in Africa and the Arab League until the secession of South Sudan in 2011, since which both titles have been held by Algeria. Its capital is Khartoum and its most populated city is Omdurman (part of the metropolitan area of Khartoum).

2.1. Data collection:

For 390 participating, a sample of 390 health care providers (specialists, family medicine physicians, medical officers and medical assistants) who were working at Primary health care and hospitals and provided health services for patients with chronic disease insured by national health insurance fund.

The health providers were selected using proportional stratified random sampling method. The participants divided in to two strata according to their working facilities, 65% were...
randomly selected from primary health care and 35% were randomly selected from secondary level (general hospitals) and tertiary level (specialized hospitals). Data was collected via closed-ended standardized questionnaires. Pretesting was done to ensure quality survey instruments and fieldwork procedures were conducted.

A structured questionnaire with closed-ended questions was developed based on literature and previous studies. The questionnaire made up of 30 questions and organized in the following sections: background characteristics, medical characteristics, health professionals’ knowledge and practice related to NHIF ‘chronic diseases package and perception about NHIF ‘chronic diseases package.

At each state, two NHIF officers have been trained to provide support during data collection. The questionnaire has been tested on five GPs (not included in the study) before data collection, and minor corrections were made.

2.2. Data management:
Data had been entered, cleaned, and analyzed using SPSS version 22.0. Descriptive statistics and Likert Scale in term of frequency tables with percentages and graphs.

3. RESULTS:
According to the response of service providers, we found the following results. Out of our 390 participants, 44% were males, while 56% were females. 82.9% were claimed urban residence, while the remainder 17.1% claimed rural residence (Figures 1 and 2).

In terms of the distribution of participants geographically, the highest percentage was for Kassala State with a percentage of 11.28%, while central Darfur State recorded the lowest participation with a percentage of 2.3% (Figure 3).

In so far as academic qualifications and work experiences are concerned, most of our participants were BS.c holders with 1-3 months of experience (Figures 4 and 5), who identified as ‘medical officers’ (Figure 6).
Around 61.4% of our participants practiced in a family health center (Figure 7).

32.7% of our participants depended on institutions provided by the ministry of health (Figure 8).
Alarmingly, 75% of our participants have not received training on the chronic disease package during the past 36 months (Figure 9). While 52% participated in effective national chronic disease protocols (Figure 10).

**Fig.9:** Distribution of the participant among receiving training on the chronic disease package during the past three years.

Fortunately, 71% of our participants reported clinical readiness in so far as the area of research is concerned (Figure 11.1). However, of those who reported that they were not ready, 68% reported unavailability of aids as the primary cause of their choice of response (Figure 11.2).

In so far as laboratory investigations are concerned, 25% of our participants reported poor laboratory services being provided to individuals with chronic diseases (figure 12.1), with the primary culprit being the unavailability of laboratory services (Figure 12.2).
33% responded ‘no’ when asked if good diagnostic services were provided to patients by the healthcare system (Figure 13.1), with incomplete diagnostic services and their unavailability ranking as the first and second cause at 46% and 45%, respectively (Figure 13.2).

Fig. 12.1: Providing good laboratory services for people with chronic diseases.

Fig. 12.2: Reasons for bad perception about laboratory services provided for insured chronic cases

Fig. 13.1: Providing good diagnostic services for people with chronic diseases by health insurance.

Fig. 13.2: Reasons for bad perception about diagnostic services provided for insured chronic cases
31% of our respondents responded negatively when asked whether the health insurance system provides good medical services for individuals with chronic diseases (Figure 14.1), with unavailability of drugs being cited as the primary cause for this response at 86% (Figure 14.2).

![Fig.14.1: providing good medical services for people with chronic diseases by health insurance.](image)

78% of our respondents agreed that the referral process of patients through different levels of the healthcare system (primary, secondary, and tertiary care) was rather straightforward (Figure 15.1). In regards to those who responded negatively, difficulty of referral procedures, followed by the unavailability of specialists were cited as the first and second cause for the response, respectively (Figure 15.2).

![Fig.15.1: Ease of referring patients to higher levels.](image)

79% of our respondents agreed that the referral process of patients through different levels of the healthcare system (primary, secondary, and tertiary care) was rather straightforward (Figure 15.1). In regards to those who responded negatively, difficulty of referral procedures, followed by the unavailability of specialists were cited as the first and second cause for the response, respectively (Figure 15.2).
As illustrated in Figure 16 below, the most notable weaknesses of the chronic diseases package provided through the National Health Insurance Fund were health education (54%) and diagnostic services (44%).

Overall, when asked to evaluate the core components of the NHIF (availability, integration of services, follow-up and dispensing of medications and comprehensiveness of the package), the most common response in regards to all four was good (scale was: very bad, bad, moderate, good, and very good), followed by very well. Results are illustrated in detail in Figure 17.
4. DISCUSSION:

The prevalence and burden of chronic diseases is increase globally and create additional burden on limited recourse health system (12). This study is unique as it's the first study in Sudan that aim to investigate the opinion of providers about NHIF chronic disease package in term of readiness of facilities, availability, integration of diagnostic test and pharmaceutical services. Readiness of clinic is crucial for providing integrated management including chronic diseases. Our study revealed that, most of the clinics are well prepared in term of setting, laboratory test and diagnostic equipment 71%, 75% and 67% respectively. However, although of these results which reflect good readiness of facilities, but participants show also some sort of lack in integration of chronic diseases benefit package. The main reasons of these perceptions are the lack of some diagnostic equipment which interrupt the service delivery and push them to refer patients for another facilities, that similar to some studies; in a study from Thailand, the PHC providers showed that strong health infrastructure, competent staff, essential medicines will strengthening their capacity to address treatment of chronic diseases(13). study done in South Africa showed gaps in structure like malfunctioning of blood pressure machines and staff shortage, this study done at primary health facilities but it was case study and include only 7 PHC facilities, study done in Cape Town revealed shortage in equipment and it interviewed only 14 health professionals. qualitative study done in Palestinian the study showed similar result, that there was infrastructure and logistics shortage but this study was healed in Public hospital not at PHC context , and interviewed only 30 healthcare providers. Similar result for health providers perceptions in Sierra Leone, showed ineffective referral pathways, but the study used both primary and secondary data.

Care for people with chronic diseases requires reliable and affordable access to medicines to avoid interruption of treatment that may worsen patients’ conditions and cause rebound effects(14).NHIF, Sudan has a generous and regularly updated essential drug list that contains 690 items covering most of common diseases. However, during last years and due to fragile economic situation in the country, the availability of medicine reduced significantly. Fortunately, 69% of our participants reflected their satisfaction with medications that provided for chronic ill cases while the remaining 31% raised their concern about availability of medicine and the comprehensiveness of NHIF essential benefit package.

These findings come in line with a systemic review that assess the readiness of health system for providing integrated package for chronic diseases. The result of the review demonstrated that almost all countries' healthcare systems have suffered from inadequate supply side responses to medicine, technologies, equipment, trained healthcare professionals, health information and leadership and stewardship (15).

Moreover, quality of provided healthcare is crucial as well since chronic ill patients needs adequate time for proper consultation and checkup. Our study findings demonstrated that about 66.8% of participants spent from 5- 10 minutes with each patient while 21% offer 10 minutes per consultation and the remaining 12% spent less than 5 minutes with each case. Almost 90% of participants conduct routine check for the blood pressure while only 60% request HBA1c test regularly for monitoring of diabetic cases.

On the other hand, clinical practice guidelines and continues training are very important to improve both the quality or process of care and patient outcomes (16). An interesting finding in our study is that only 25% of participants received training about chronic diseases benefit package during the last three years while around 50% of the facilities lack effective national protocols or guidelines for treating chronic diseases. These finding come in line with study conducted in Sir Lanka where primary health care providers reflect the insufficient knowledge and training about preventive measure to control and improve the quality of chronic diseases management (17), and cross-sectional study healed in Cape Town for NCDs at 30 PHC facilities. 14 health professionals were interviewed and they revealed shortage in time and indicated the importance of workshops and group meeting in patient education and empowerment beside that the study revealed significant gab in presence of these guidelines, also a qualitative study done in Palestinian showed that health providers did not used updated clinical guidelines, but this study was done in done in public hospitals not at PHC context. As overall evaluation, participants were asked about the strength points of NHIF package for chronic cases; about 58.8% rank the laboratory services followed by 58% clinic room, 55.5% pharmaceutical services and 54.5% the medical staff. On the other hand the main weak points were health education 53.5% and the diagnostic services 43.7%. Integration and comprehensiveness of chronic diseases’ benefit package is essential to achieve UHC. Many studies reflect the importance of these approaches to achieve equity, quality, cost effectiveness and social justice for population (17,18,19). Therefore, our study asked the participants about their opinions in term of availability, integration, follow up system and comprehensiveness of benefit package that provided for insured chronic ill patients. The result demonstrate their satisfaction as they used the term GOOD for describing the NHIF ‘service package for chronic diseases. It’s worth noting they ranked the follow up system first followed by the availability of services, integration of the package and then the comprehensiveness of the overall services. These results comes in a line with many reports that were conducted by NHIF which raised the concerns about the integration and comprehensiveness of service delivery as challenges faced utilization of services in some states.

CONCLUSION:

From the previous results, the following observations can be summarized:

- Weak training and the absence of effective protocols at the level of most service-providing institutions (75% and 48%, respectively).
- The absence or weakness of some services, such as health education and diagnostic services, greatly affected the opinion of service providers about the comprehensiveness of the package (60%).
- Despite the challenges of drug availability, 70% of the participants positively expressed the form of the presented drug package, bearing in mind the importance of reviewing the list to ensure its inclusion of new items.
- There is a challenge in the abundance of specialists with the need to simplify the current referral procedures.
- Clinic services, lab and follow-up system are among the strong points of the package.
- Health education and diagnostic services are among the main weaknesses of the package.

RECOMMENDATIONS:

Based on this work, we recommend the following:

1) Immediate constitution of health educations boards across the individuals composing the program.
2) Setting of training activities and application of national guidelines at facility level.

3) Improving the infrastructure capacity of health facilities especially in rural areas to be more capable for providing an integrated chronic disease services.

4) Assurance of constant and adequate supply of drugs needed with considering the essential drug list to be more comprehensive

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