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RESEARCH ARTICLE

Awareness of Health Care Practitioners About the National Health Insurance in Tshwane District, South Africa

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Abstract:

Background:

In 2012, the National Department of Health of South Africa launched the National Health Insurance (NHI) pilot program in 11 districts, towards universal health coverage for all South Africans. Health Care Practitioners (HCPs) are important role-players in its implementation. We decided to evaluate to what extent the HCPs were aware of the NHI program after three years of the pilot phase.

Objective:

To evaluate the awareness of HCPs about the NHI in the pilot Tshwane district of South Africa.

Method:

A cross-sectional survey was conducted among 1753 HCPs in Tshwane district. At 95% confidence level and 5% error margin, the sample size was 315 HCPs, but we over-sampled to 480. The study was conducted in 25 health facilities within the district. A pre-tested self-administered questionnaire was used.

Results:

A high proportion of HCPs were unaware of the objectives of the NHI program ($p < 0.001$); number of NHI pilot sites [(281; 59.4%) versus (145; 30.7%), $p < 0.001$]; rationale used to select pilot sites [(223; 46.9%) versus (193; 40.5%), $p = 0.047$]; role of the Integrated School Health Services (ISHP) [(250; 52.7%) versus (70; 14.8%), $p < 0.001$]; and specialists constituting the District Clinical Specialist Team (DCST) ($p < 0.001$). However, awareness regarding the Ward-Based Outreach Team (WBOT) leader was high [(236; 49.9%) versus (135; 28.5%), $p < 0.001$].

Conclusion:

HCPs in Tshwane district demonstrated poor awareness of the NHI. This reveals that any awareness effort towards the NHI has not taken effect among the HCPs in this district.

Keywords: Awareness, National health insurance, Health care professionals, Pilot, Tshwane district, Universal health coverage.

1. INTRODUCTION

Globally, countries have been encouraged by the World Health Organisation (WHO) to move towards Universal Health Coverage (UHC) [1]. One of the seventeen Sustainable Development Goals (SDGs) adopted by the United Nations urges all countries to: "Achieve universal health coverage including financial risk protection, access to quality essential health care services and access to safe, effective, quality and affordable essential medicines and vaccines for

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all" [1]. In South Africa, UHC is referred to as National Health Insurance (NHI) [2]. The goal of the NHI is to ensure that the South African population has access to needed quality health services at an affordable cost [1].

The National Health Insurance (NHI) is an insurance benefit system established by a national government to cover all or almost all of its citizens [1]. The system is entirely or partially funded with tax money. In some countries, such as the UK's National Health Service, contributions to the system are made *via* general taxation and therefore is not optional even though the use of the health scheme is [3]. In South Africa, the NHI is a "financing system" meant to ensure that all citizens of South Africa, and legal long-term residents, are provided with essential health care, regardless of their employment status and ability to make a direct monetary contribution to the fund [4]. The system is aimed at addressing access to appropriate, efficient and quality health services for all South Africans regardless of their socio-economic status [5, 6].

Studies conducted in Africa on the National Health Services have focused on the fragmentation of health care delivery, which hampers the move towards universal coverage [7], benefit of the NHI to subscribers [8], and progress made towards UHC systems of Ghana, South Africa and Tanzania [9]. A study conducted among 216 dentists in Lagos, Nigeria in 2010 indicated that only 62 (28.7%) had good knowledge about the NHI System (NHIS), with the majority 152 (70.4%) viewing the NHIS as a good idea that would succeed if properly implemented [10]. However, the positive attitude towards NHI system as reported by radiographers in South East Nigeria did not translate into awareness regarding the principles and operations of the scheme [11].

Studies on knowledge and awareness about the NHI in South Africa have used different tools to evaluate the awareness of HCPs. The private sector doctors practising in the south of KwaZulu-Natal (KZN) province (a predominantly rural, underserved province) were asked if they felt their level of knowledge was satisfactory, good or whether they had no knowledge at all about the NHI [12]. In that study, over 68% had satisfactory knowledge about NHI. The study conducted by Mndzebele and Matsi at the Pietersburg-Mankweng Academic Hospital, in the Limpopo Province of South Africa among 253 healthcare workers enquired about whether the HCPs knew what the NHI was all about, how their facility was involved in its implementation and the policy contents of NHI [13]. Regarding awareness on what the NHI was all about, 64% of the participants indicated that they had an idea, although the study did not explore what their ideas were. Another study conducted by Bezuidenhout and Matlala at Dr George Mukhari Academic Hospital, Ga-Rankuwa South Africa evaluated HCPs on their knowledge about the compulsory membership of the NHI, the main objectives of the NHI and awareness of the proposed socio-economic benefits of NHI. Regarding their awareness on the objectives of the NHI, only slightly over half (54.6%) of the HCPs were reported to be aware of NHI's objectives [14].

1.1. Overview of the National Health Insurance in South Africa

The Health Minister, Dr. Aaron Motsoaledi launched the NHI pilot in South Africa on 1st April, 2012. The objectives of the pilot programme were to test the ability of the districts to assume greater responsibilities under the NHI, assess utilisation patterns and the affordability of implementation of a Primary Health Care (PHC) service package [15].

There are 52 health districts in South Africa. The districts selected were OR Tambo (Eastern Cape), Gert Sibande (Mpumalanga), Vhembe (Limpopo), Pixley ka Seme (Northern Cape), Eden (Western Cape), Dr K Kaunda (North West), Thabo Mofutsanyane (Free State), Tshwane (Gauteng), uMzinyathi and uMgungundlovu (KwaZulu-Natal). The KwaZulu-Natal province added a third district (Amajuba), due to the large size of the province and its rural context, for which it provided the funding. Therefore, the total number of districts for the NHI pilot phase roll-out was 11 [16]. The selection of the pilot districts was based on the results of an audit which took into consideration, *inter alia* the district's health profile, demographics, income levels and other social factors impacting on health. The pilot sites were chosen according to a mix of both size and poverty levels of such districts [17], not on their record of good performance over the years.

The National Department of Health listed the objectives of the NHI as follows [18]:

To improve access to quality health services for all South Africans, irrespective of whether they are employed or not

To pool risks and funds so that equity and social solidarity will be achieved through the creation of a single fund

To procure services on behalf of the entire population and efficiently mobilise and control key financial resources

To strengthen the under-resourced and strained public sector so as to improve health systems performance

As important role players in the implementation of the NHI, it was vital for the HCPs to be aware of these objectives. Since the release of the Green [19] and White [2] Papers by the NDoH, it can be assumed that each HCP familiarised themselves with these objectives from the various public domains available in the country. However, this assumption needed to be tested.

According to the Green Paper on NHI, the re-engineering of PHC services was to be implemented through three streams: Municipal Ward-based Teams (WBOTs), Integrated School Health Program (ISHP) and the District Clinical Specialist Teams (DCSTs) [19]. Each WBOT comprising Community Health Workers (CHWs) is led by a nurse and linked to a PHC facility. The CHWs' role is to assess the health status of individuals in a household, provide health promotion education and identify those in need of preventive, curative and rehabilitative services in the community [19]. The ISHP was introduced to improve the physical, mental and general well-being of school-going age children, estimated at 12 million in 2015. This program also provides health promotion, preventive and curative services to the children [19]. The study assessed the awareness of HCPs regarding the cadre assigned with the leadership of the WBOT and also their awareness of the function of the ISHP in schools.

The DCST stream was launched in September 2012, guided by a report from the Ministerial Task Team [20]. Its introduction was meant to be one of the core elements of the PHC approach [21]. They were intended to improve the quality of health care and outcomes for mothers, new-borns and children. A DCST was to be located in each district comprising a family physician, a primary health care nurse, an obstetrician and gynaecologist, an advanced midwife, a paediatrician and a paediatric nurse. The DCST was to be responsible for "the quality of clinical services, clinical training, monitoring, evaluating and improving clinical services, supporting district level organisational activities, supporting health systems and logistics, collaboration, communication and reporting, and teaching and research activities [21]." The authors of this article are of the opinion that there needs to be a collaboration and mutual understanding between the DCST and the HCPs in each district. For this to happen, all HCPs need to be aware of the roles of the DCSTs. This study, *inter alia* was intended to establish this awareness.

1.2. Significance of the Study

This study aimed at exploring specific perspectives on the awareness of HCPs regarding the NHI, namely the objectives of the NHI, the number of pilot sites, the national government's rationale for choosing the pilot sites, HCPs' awareness on the leadership of the WBOT, role of the ISHP and which specialties constituted the DCST. Awareness of the philosophy, structure and systems functioning have been found to influence team work in a given enterprise [22]. To our knowledge, at the time of the study, there were no studies conducted in the focus areas outlined above, regarding the awareness of the HCPs about the NHI. This study intended to bridge that knowledge gap.

1.3. Ethical Considerations

The study details were explained to each respondent, and a signed informed consent to participate was obtained before the study commenced. The Sefako Makgatho University Research Ethics Committee granted ethics clearance for the study (SMUREC/M/113/2015: IR). In addition, the Tshwane District Research Committee provided the permission to conduct the study in the selected district health facilities (TRC Project Number: 44/2015). Confidentiality of respondents' data was ensured by the removal of all respondents' identifiers and storage of collected data in a cupboard under lock and key throughout the study period. Each participant was informed that s/he could withdraw at any point during the study without any adverse consequences.

2. MATERIALS AND METHODOLOGY

2.1. Study Aim and Objectives

The study aim was to evaluate the awareness of HCPs about the NHI in Tshwane district. The objectives were to assess the awareness of the HCPs regarding the objectives of the NHI, the number of NHI pilot sites in the country, WBOT leadership in the health facilities, the role of the ISHP and the specialists constituting the membership of the DCST.

2.2. Study Design

This was a cross-sectional survey.

2.3. Study Setting

The study was conducted among HCPs in the Tshwane district. The district is one of the five districts in the Gauteng Province of South Africa, situated at the extreme northern part of the province [23]. According to the 2011, South African Census, the district had a population of 2.9 million people [24]. Healthcare service delivery platforms comprised 91 health facilities: 79 clinics, eight Community Health Centres (CHCs) and four district hospitals [25]. (Table **1**). The researchers collected data in 25 out of the 91 healthcare facilities. This included all four district hospitals, five CHCs, and randomly selected 16 of the 79 clinics (20%). The random selection of the clinics was done by means of a table of random numbers [26].

2.4. Study Population and Sampling Strategy

All HCPs working in the public primary health care facilities in Tshwane district at the time of the study formed the study population. The total number of HCPs in all categories was 1753, based on the Personnel and Salary Information System (PERSAL) of the Provincial Department of Health, Tshwane District (Table **1**). Therefore, at a confidence level of 95% and 5% error margin, a representative sample size of the HCPs was 315 respondents [27]. (This represented 18% of 1753 rounded off to 20%, yielding a sample size of 348 HCPs). Since HCPs were not all on duty to form the full staff complement at any point in time, in any of the healthcare facilities, the research team recruited all the HCPs (in their various categories) on duty on the day of data collection. This led to oversampling to 480 HCPs who then constituted the final sample size. Respondents who were below 18 years, those who were still students as well as those who declined participation were excluded from the study.

2.5. Data Collection

A pre-test self-administered questionnaire derived from a validated questionnaire [28] and from literature review [29, 30] was used for data collection. Permission to conduct the study at the various sites was obtained telephonically from the facility managers before each site was visited. The protocol, ethics approval (from both the Sefako Makgatho Health Science University and Tshwane District) were e-mailed to the facility managers prior to the arrival of the research team. The data collection period was from 12th October to 3rd November 2015. Fourteen trained research assistants distributed the research questionnaires to respondents on site at the various health care facilities. One of the researchers always accompanied the data collectors to assist in addressing questions and concerns that possibly be raised by respondents and facility management teams on site. The researcher also checked the questionnaires for completeness and correctness when they were submitted back by the research assistants.

2.6. Data Analysis

Data that were analysed related to the baseline characteristics, HCPs' awareness regarding objectives of the NHI, pilot sites, the NHI in relation to the WBOT and the ISHP, and awareness of the HCPs about the specialists constituting the DCST. Since the medical practitioners and the nurses (assistant, enrolled and professional nurse levels) formed the largest groups among the HCPs, the researchers conducted a comparison of their awareness about the NHI.

Regarding the questionnaire, the researchers graded the HCPs' awareness as follows: "strongly agree", "agree", "not sure", "disagree" and "strongly disagree". During analysis, the "strongly agree" and "agree" were combined as "agree", while the "disagree" and "strongly disagree" were also combined as "disagree". Therefore, the results were presented in relation to three degrees ("agree", "not sure" and "disagree"). Data were analysed using Statistical Analysis System (SAS) (Release 9.2) software for Windows programme. The results of univariate data analyses were presented as frequencies in tables while bivariate analyses were conducted to determine associations of dependent and independent variables using the Fisher Exact test. Statistical significance was set at p-value < 0.05.

3. RESULTS

Table **2** indicates that the age range mostly represented were from 31 to 40 years (165; 34.4%). There were more females (395; 83.9%) than males, with an almost equal proportion of the single and married HCPs (218; 47.3%) and (212; 46.0%), respectively. The category mostly represented were the nurses in their various categories (308; 64.1%), followed by medical practitioners (44; 9.2%).

Table 1. Institutions from which data were collected (n=480).

#	Institution	Sub-District Number	Number of HCPs	Percentage
1	Maria Rantho Clinic	1	21	4.4
2	KT Motubatse Clinic	1	29	6.0
3	Zamile Clinic	1	4	0.8
4	Kgabo CHC	1	10	2.1
5	Karenpark Clinic	1	7	1.5
6	Odi District Hospital	1	78	16.2
7	Temba CHC	2	14	2.9
8	Mandisa Shiceka Clinic	2	13	2.7
9	Suurman Clinic	2	9	1.9
10	Refentse Clinic	2	11	2.3
11	Jubilee District Hospital	2	52	10.8
12	Folang Clinic	3	12	2.5
13	FF Ribeiro Clinic	3	13	2.7
14	Skinner Street Clinic	3	18	3.8
15	Tshwane District Hospital	3	41	8.5
16	Laudium CHC	3	18	3.8
17	Pretoria West District Hospital	3	28	5.8
18	Laudium Clinic	4	12	2.5
19	Lyttelton Clinic	4	13	2.7
20	East Lynne Clinic	5	14	2.9
21	Refilwe Clinic	5	12	2.5
22	Stanza Bopape CHC	6	18	3.8
23	Mamelodi West Clinic	6	17	3.5
24	Bronkhorstspruit Clinic	7	7	1.5
25	Dark City CHC	7	9	1.9
		Total	480	100.0

Table **1** indicates the 25 health facilities, comprising four district hospitals, five Community Health Centres (CHCs) and 16 clinics. The health facilities with the highest number of HCPs who responded were Odi District Hospital (78; 16.25%), Jubilee Hospital (52; 10.83%), Tshwane District Hospital (41; 8.54%), KT Motubatse Clinic (29; 6.04%) and Pretoria West Hospital (28; 5.83%).

Table 2. Baseline characteristics (n=480).

Baseline Characteristics	Frequency	Percentage
Age (Years) n=480		
20 – 30	117	24.4
31 – 40	165	34.4
41 – 50	110	22.9
51 – 60	60	12.5
61 – 70	7	1.4
Missing data	21	4.4
Mean (years)	38.70	
Median (years)	37	
Range (years)	20-65	
Standard Deviation (years)	10.06	
Gender (n=471)		
Male	76	16.1
Female	395	83.9

(Table 2) contd.....

Baseline Characteristics	Frequency	Percentage
Marital Status (n=461)		
Single	218	47.3
Married	212	46.0
Widowed	11	2.4
Divorced/Separated	20	4.3
Category (n=480)		
Medical specialists	5	1.0
Medical practitioners	44	9.2
Dentists	12	2.5
Dental assistants	11	2.3
Oral hygienists	1	0.3
Pharmacists	6	1.2
Pharmacy assistants	21	4.4
Professional nurses	229	47.7
Enrolled nurses	54	11.2
Nurse assistants	25	5.2
Physiotherapists	10	2.3
Occupational therapists	8	1.6
Radiographers	7	1.3
Not indicated	47	9.8
Total	480	100.00

Table **3** demonstrates that significantly more HCPs disagreed (incorrectly) regarding the listed objectives of the NHI, ($p < 0.001$). Furthermore, there was a significantly higher proportion (281; 59.4%) of HCPs who agreed (incorrectly) with the statement that "the number of pilot sites in the country were 12" (nationally, 11 sites were selected). The proportion of HCPs who disagreed (correctly) with the statement that "Ward-Based Outreach Teams (WBOT) are led by a doctor" was significantly higher than the proportion that agreed ($p < 0.001$). Significantly more HCPs agreed (incorrectly) with the statement that "the rationale for choosing the pilot districts in the country was based on their record of good performance over the years" ($p = 0.047$). Although there was a significantly higher proportion of HCPs who disagreed (incorrectly) with the statement that "the ISHP supports prevention and health promotion in schools" ($p < 0.001$), the proportion of those who were unsure about the ISHP was almost a third (32.5%) when compared to the combined "agree" and "disagree" categories (67.5%).

Table 3. Assessment of HCPs' awareness regarding aspects of the NHI.

Variables n (%)	Agree	Disagree	Not Sure	*P-value
One of the objectives of the NHI is to pool risks and funds so that equity and social solidarity can be achieved (n=475)	67 (14.1)	304 (64.0)	104 (21.9)	< 0.001
One of the objectives of the NHI is to improve access to quality health services (n=479)	33 (6.9)	270 (56.4)	176 (36.8)	< 0.001
One of the objectives of the NHI is to strengthen and improve health systems performance (n=478)	48 (10.0)	261 (54.6)	169 (35.4)	< 0.001
The selected pilot sites for NHI in the country were twelve (12) (n=473)	281(59.4)	145 (30.67)	47 (9.9)	< 0.001
The rationale for choosing the pilot sites was based on their record of good performance over the years (n=476)	223 (46.9)	193 (40.5)	60 (12.6)	= 0.047
The ward-based outreach teams (WBOTs) are led by a doctor (n=473)	135 (28.5)	236 (49.9)	102 (21.6)	< 0.001
The Integrated School Health Program (ISHP) supports preventive and health promotion services in schools (n=474)	70 (14.8)	250 (52.7)	154 (32.5)	< 0.001

* Fisher Exact Test (comparison between "Agree" and "Disagree").

Table **4** illustrates that a significantly large proportion of HCPs ($p < 0.001$) chose "Disagree" in all the specialist categories when requested to indicate whether a listed specialist formed part of the DCST or not. Adding together the "Not sure" and "Disagree" proportions increased the number of the HCPs who were unaware of the specialists in the DCST.

Table **5**, indicates that there was a difference between medical practitioners and nurses regarding their agreement with the statement: "One of the objectives of the NHI was to strengthen and improve health systems performance." Significantly more medical practitioners than nurses disagreed (incorrectly) with the statement ($p = 0.034$). On the statement about the awareness of the HCPs on the number of NHI pilot sites in the country, there was again a difference between medical practitioners and the nurses. Both groups agreed (incorrectly) with the statement that the pilot sites were 12, but significantly more medical practitioners than nurses did so ($p = 0.003$).

Table 4. Responses of all HCPs to the statement "The District Clinical Specialist Team (DCST) comprises the following specialists…"

Which specialists belong to the DCST?	Agree n (%)	Disagree n (%)	Not sure n (%)	#P-value
*Anaesthetist (n=471)	148 (31.4)	230 (48.8)	93 (19.8)	< 0.001
Orthopaedic surgeon (n=470)	158 (33.6)	222 (47.2)	90 (19.2)	
*Advanced midwife (n=472)	90 (19.1)	239 (50.6)	143 (30.3)	
PHC professional nurse (n=473)	72 (15.2)	241 (51.0)	160 (33.6)	
*Paediatric nurse (n=471)	112 (23.8)	234 (49.7)	125 (26.5)	
General surgeon (n=468)	145 (31.0)	225 (48.1)	98 (21.0)	
*Obstetrician and gynaecologist (n=477)	128 (26.8)	232 (48.6)	117 (24.5)	
*Paediatrician (n=472)	134 (28.4)	227 (48.1)	111 (23.5)	
Internal Medicine specialist (n=471)	126 (26.8)	243 (51.6)	102(21.7)	
Public health specialist (n=475)	129 (27.2)	237 (50.0)	109 (23.0)	
*Family physician (n=472)	116 (24.6)	238 (50.4)	118 (25.0)	
Psychiatrist (n=468)	124(26.5)	237 (50.6)	107 (22.9)	

* Member of the District Clinical Specialist Team (DCST); # Comparison between "Agree" and "Disagree": $p < 0.001$ for all specialists (Fisher Exact Test).

Table 5. Comparison between medical practitioners' and nurses' awareness on aspects of the NHI

-	Medical Practitioners			Nurses			P value
Statement	Agree	Disagree	Total	Agree	Disagree	Total	
One of the objectives of the NHI is to pool risks and funds so that equity and social solidarity can be achieved.	5 (15.6)	27 (84.4)	32 (100.0)	51 (21.2)	189 (78.8)	240 (100.0)	0.642
One of the objectives of the NHI is to improve access to quality health services. n (%)	2 (7.4)	25 (92.6)	27 (100.0)	26 (13.5)	167 (86.5)	193 (100.0)	0.542
One of the objectives of the NHI is to strengthen and improve health systems performance. n (%)	1 (3.6)	27 (96.4)	28 (100.0)	39 (20.2)	154 (79.8)	193 (100.0)	0.034*
The selected pilot sites for NHI in the country were twelve (12) in number. N (%)	33 (89.2)	4 (10.8)	37 (100.0)	176 (65.4)	93 (34.6)	269 (100.0)	0.003*
The rationale for choosing the pilot sites was based on their record of good performance over the years. n (%)	27 (67.5)	13 (32.5)	40 (100.0)	136 (51.5)	128 (48.5)	264 (100.0)	0.058
The Ward-based Outreach Teams (WBOTs) are led by a doctor n (%)	13 (44.8)	16 (55.2)	29 (100.0)	86 (36.8)	148 (63.2)	234 (100.0)	0.397
The Integrated School Health Program (ISHP) supports preventive and health promotion services in schools. n (%)	8 (25.8)	23 (74.2)	31 (100.0)	44 (22.4)	152 (77.6)	196 (100.0)	0.679

Fisher Exact Test; *Statistically significant.

Although there was no significant difference ($p = 0.397$) between the medical practitioners and nurses regarding their disagreement with the statement: "The Ward-Based Outreach Teams (WBOTs) are led by a doctor", taken individually, there were significantly more nurses who disagreed versus those who agreed with the statement ($p < 0.001$) compared to the statistically insignificant difference among the medical practitioners ($p = 0.432$) – the latter two p-values are not shown in the Table 5.

4. DISCUSSION

Our study showed that, according to the sample analysed, the HCPs in the Tshwane District comprised mostly middle-aged health care personnel, more females (almost five times) than males, an almost equal proportion of single and married HCPs (± 47.0% each) and the nursing cadres constituting the largest category (84.0%). Furthermore, the study demonstrated poor awareness of the HCPs regarding the objectives of the NHI, number of pilot sites, the rationale used by the government of South Africa in choosing the pilot sites and the role of the ISHP in the district schools. However, HCPs were aware of the HCP leading the WBOTs.

The fact that the HCPs incorrectly disagreed with the listed objectives of the NHI implies that they had poor awareness and possibly knowledge in this regard. The objectives related to fundamental principles that must be operational for an improved and sustainable health system, namely pooling risks and funds for health equity, improving access to quality health services and strengthening health systems performance [18]. The authors of this article could not explain the reason for the poor awareness of the HCPs regarding the NHI objectives, given that the information has

been available in the public domain since the launch of the pilot phase in 2012. However, low awareness of UHC systems has been reported in other studies outside South Africa [10, 11], as well as within South Africa [31]. Contrary to our study, in 2012, Kate and Alibi, found a high level of awareness (89.5%) about the NHI, as well as good understanding (81.3%) of the objectives of the NHI among HCPs based in Mthatha, a rural town in Eastern Cape Province of South Africa [32]. The authors of this study are of the opinion that the difference in the sample sizes (86 in their study versus 480 in the current study) and the fact that their study was conducted in only one setting (Mthatha General Hospital) versus the whole Tshwane District in the current study may have accounted for the difference in the levels of awareness about the NHI objectives.

The finding that there was a significantly higher proportion of HCPs who incorrectly agreed with the statement that "the number of pilot sites in the country was 12" (when they were actually 11) indicated that the HCPs had poor awareness in this regard. As already mentioned, HCPs are important stake-holders in health care delivery. It is not unreasonable to expect that they would have familiarised themselves with the content and processes involved in the running of the NHI, which were being piloted in their own district and had been running for three years since the nation-wide launch of the NHI pilot phase [16]. Furthermore, significantly more HCPs incorrectly agreed with the statement that "the rationale for choosing the pilot sites in the country was based on their record of good performance over the years". They were actually chosen according to a mix of both size and poverty levels of the districts [17]. The NHI pilot would not have been representative of the entire spectrum of the health districts in the country if there was this bias in their selection.

A significantly high proportion of HCPs disagreed (correctly) with the statement that the WBOT was led by a doctor. The plan and practice were for the WBOT to be led by a nurse [19]. The nurse leader, among other duties, is expected to develop the capacity of the Community Health Workers (CHWs) to deliver Primary Health Care (PHC) outreach services, conduct community assessments, profile and diagnose community health needs, manage performance of team members and also monitor and evaluate this performance [33]. The awareness of the HCPs (in their various categories) has the potential to enable the HCPs to position themselves for a meaningful contribution in the implementation of the WBOTs. This could be achieved through discussion fora in which the nurse leader can elicit support from fellow HCPs in dealing with the challenges they encounter in the communities.

A significantly higher proportion of HCPs demonstrated lack of awareness that the role of the ISHP was to support prevention and health promotion in schools. Furthermore, the proportion of those who were not sure about the role of the ISHP was almost a third of all the HCPs who responded to this question. All HCPs in the district should be aware that the ISHP is actively involved in schools in identifying learners with physical barriers to learning (hearing, speech, eyesight and oral health), infections, like tuberculosis and vaccination of girls against Human Papilloma Virus (HPV) [19]. HCPs should be aware and be ready to receive these learners referred for further management from the catchment areas of various health facilities.

Our study showed that a significantly large proportion of HCPs indicated that none of the specialists formed part of the DCST. This implies that they had poor awareness of the specialists constituting the DCST. The specialists belonging to the DCST were clearly outlined in the Policy Document (Green Paper) on NHI [19]. The introduction of the DCST was prompted by the country's need to achieve the Millennium Development Goals (MDGs) for Maternal and Child Health (MCH) before and after 2015 [34]. Their main task was identified as "to provide clinical governance at the district level by overseeing quality in service delivery and effective management of resources to enhance health outcomes" [34]. They serve as an interface between different layers of the healthcare system to strengthen collaboration and teamwork with their respective district managers, provincial specialists, district specialists and other HCPs in the district [21, 34]. Given the task of the DCSTs outlined above, there is need for HCPs to be aware of the specialists constituting the membership of the DCSTs, so as to also familiarise themselves with their functions in the various districts. The reasons for the poor awareness of HCPs regarding the specialists constituting the DCSTs are unclear to the authors of this article. One possibility is that the DCST in the Tshwane District may not have introduced themselves to the HCPs within the district, *e.g.* by visiting the district health facilities or participating in HCPs' regularly held meetings in the district.

The study has shown that, although both the medical practitioner and nurse categories showed poor awareness regarding the objectives of the NHI, there were significantly more medical practitioners than nurses who demonstrated poor awareness in this regard. The public health sector in South Africa has been described as "under-resourced and strained" [19], which these objectives sought to address. Furthermore, when comparing medical practitioners and nurses on their awareness of the number of selected pilot sites for NHI in the country, both categories demonstrated poor

awareness, and again a significantly higher proportion of medical practitioners demonstrated poor awareness compared to the nurses. Between these two categories, more emphasis should be laid on medical practitioners when raising awareness on the structure and objectives of the NHI in South Africa, which should be preceded by an exploration of the underlying reasons for the poor awareness.

4.1. Strengths and Limitations

The study was conducted on a scheduled day for each health care facility. This situation could have affected the sampling frame, since some HCPs were off-duty on the day of data collection. The respondents' attitudes on the subject under investigation may have influenced their responses, for example, a negative attitude on the objectives of the NHI could have been interpreted as poor or lack of awareness. Methodologically, the oversampling improved the power to the study.

CONCLUSION

The HCPs were aware that the leader of the WBOT is not a doctor. However, their poor awareness regarding the objectives of the NHI, the rationale in the choice of the pilot sites, the number of NHI pilot sites, the role of the ISHP in schools and the identification of the DCST specialists reveals that any awareness-raising efforts regarding the NHI has not taken effect among the HCPs in the Tshwane district. In addition to the re-enforcement of current strategies used to raise awareness about the NHI among the HCPs (*e.g.* publications in the media), other strategies should be explored (*e.g.* regular health facility visits by the DCSTs, regular in service training on NHI and use of the health department's online platform for information dissemination).

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The Sefako Makgatho University Research Ethics Committee granted ethics clearance for the study (SMUREC/M/113/2015: IR). In addition, the Tshwane District Research Committee provided the permission to conduct the study in the selected district health facilities (TRC Project Number: 44/2015).

HUMAN AND ANIMAL RIGHTS

No Animals were used in this research. All human research procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2008.

CONSENT FOR PUBLICATION

The study details were explained to each respondent, and a signed informed consent to participate was obtained before the study commenced. Confidentiality of respondents' data was ensured by the removal of all respondents' identifiers and storage of collected data in a cupboard under lock and key throughout the study period. Each participant was informed that s/he could withdraw at any point during the study without any adverse consequences.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

AUTHORS' CONTRIBUTIONS

L.H.M. wrote the study proposal and drafted the manuscript. G.A.O., K.E.H. and M.M. provided intellectual input and reviewed the draft manuscript. G.A.O edited and proof-read the final manuscript. All authors approved the final manuscript and agreed to submission to the Open Public Health Journal for publication.

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