KNOWLEDGE, ATTITUDE AND PRACTICE OF NURSES REGARDING DIABETES MELLITUS IN TZANEEN CLINICS, LIMPOPO PROVINCE

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Introduction

In the year 2019, the International Diabetes Federation (IDF) reported that 463 million people suffered from diabetes worldwide. Of those, 19 million belonged to the African region of the IDF. In 2017, the IDF reported that the number of adults who were living with DM in South Africa alone was 1,826,100; a prevalence rate of 5.4%. In just 2 years, that prevalence increased from 5.4% to 12.7% in 2019. It has further been projected that by the year 2030, there will be around 29 million adults living with diabetes in the African IDF region; and by 2045, this could increase to 47 million (IDF, 2019).

Globally approximately 5 million people aged between 20 and 79 years died from DM-related complications in 2015. This was higher than the combined number of deaths from HIV/AIDS (1.1 million), tuberculosis (1.4 million), and malaria (429,000) in 2015 (UNAIDS,2015; WHO,2016; NCD,2016). DM is a serious, long-term condition with a major impact on the lives and well-being of individuals, their families, and society at large (Saeedi et al., 2019).

Internationally, Alotaibi et al., (2016) analysed several Knowledge, Attitude and Practice (KAP) studies on this subject and concluded that significant knowledge gaps amongst nurses from both developed and developing countries exist. Nurses from the regions that were represented in the various studies had suboptimal knowledge, negative attitudes and poor practices in managing patients with diabetes (Alotaibi et al., 2016). The KAP of nurses in diabetes-care in Limpopo Province has been under-studied ,hence the need to conduct this study in Limpopo Province.

Methods

A quantitative descriptive cross-sectional study was conducted among nurses of different ranks working in clinics around Greater Tzaneen Municipality area, Limpopo Province. Nurses of different ranks who were available on the day of data collection and who agreed to participate were included in the study. Data collection was done over a period of 2 weeks (May 2019) by the principal researcher. A drop and collect strategy was done where questionnaires were dropped off in the morning and collected in the late afternoon in order to maximise the response rate without interfering with service delivery.

A self-administered questionnaire was used to collect data for the study. The questionnaire was in English and comprised of two main components, namely; Section A (demographics) and Section B (assessment of KAP). The assessment of knowledge included a total of 39 questions that required 'yes', 'no' or 'I don't know' answers. The questions were derived from the diabetes knowledge questionnaire compiled by O'Brien and the Diabetic Attitude Survey Scale 3 (DAS3 scale) -O'Brien, Michaels and Hardy (2003). The questionnaire is available online and has been used in other international diabetic KAP studies,(https://medicine.umich.edu).

Assessment of attitude and practices comprised of twenty (20) attitudes and seventeen (17) practice statements. A five (5) option Likert scale (Strongly agree, agree, neutral, disagree, strongly disagree) was used.

Ethical Considerations: Ethical clearance was obtained from Turfloop Research Ethics Committee (TREC), project number TREC/157/2018 PG. Permission was obtained from Limpopo Provincial Department of Health research committee, approval number LP -201904-002. Additional permission was obtained from Mopani District office. Written- informed consent was obtained from those who agreed to participate.

Table 1: Respondents' overall knowledge, attitude, and practices towards Diabetes (n=47)

Knowledge level	No (%)	Attitude % score	N (%)	Practice % score	N(%)
Poor	12 (<50)	Positive ≥ 50%	40 (85)	Good ≥50%	38 (81%)
Moderate	23 (50-70)	Negative< 50%	07 (15)	Poor <50%	9 (19)
Good	12 (>70)				

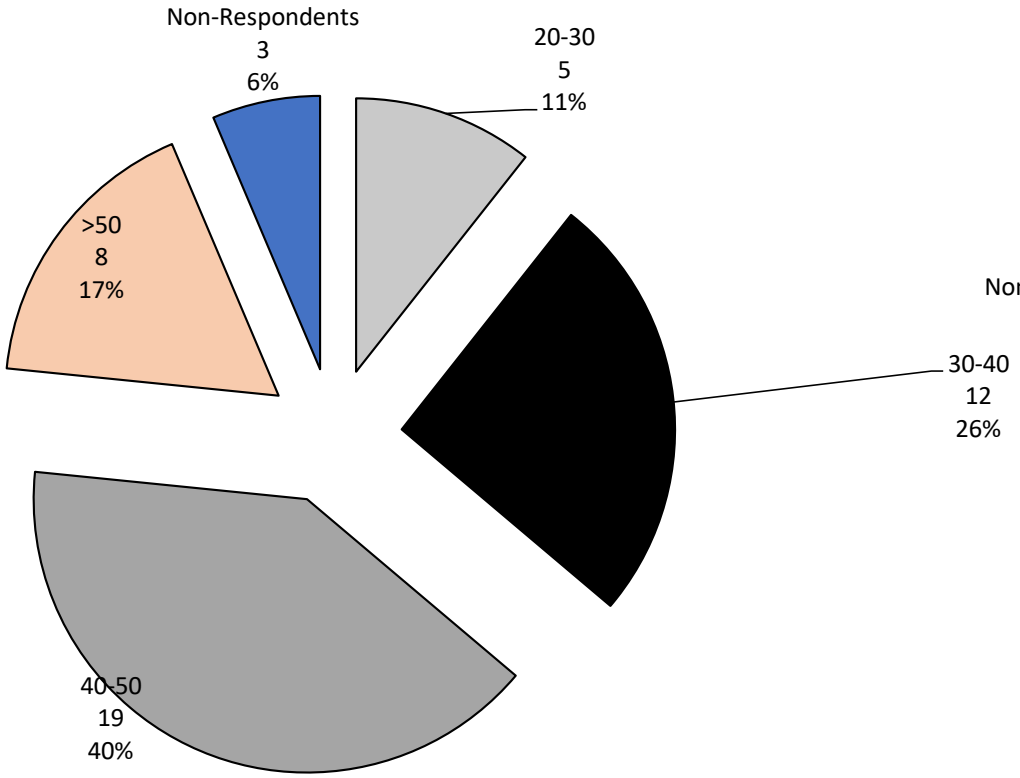
Results

A total of 47 nurses of different ranks participated in this study, giving a response rate of 59% of the total, 43 (91%) were females and 4 (8.7%) were males. Respondents between 40 and 50 years were 19 (40%). A greater proportion of the respondents were Registered Nurses/Professional Nurses with a total of 16 (34.0%)c.

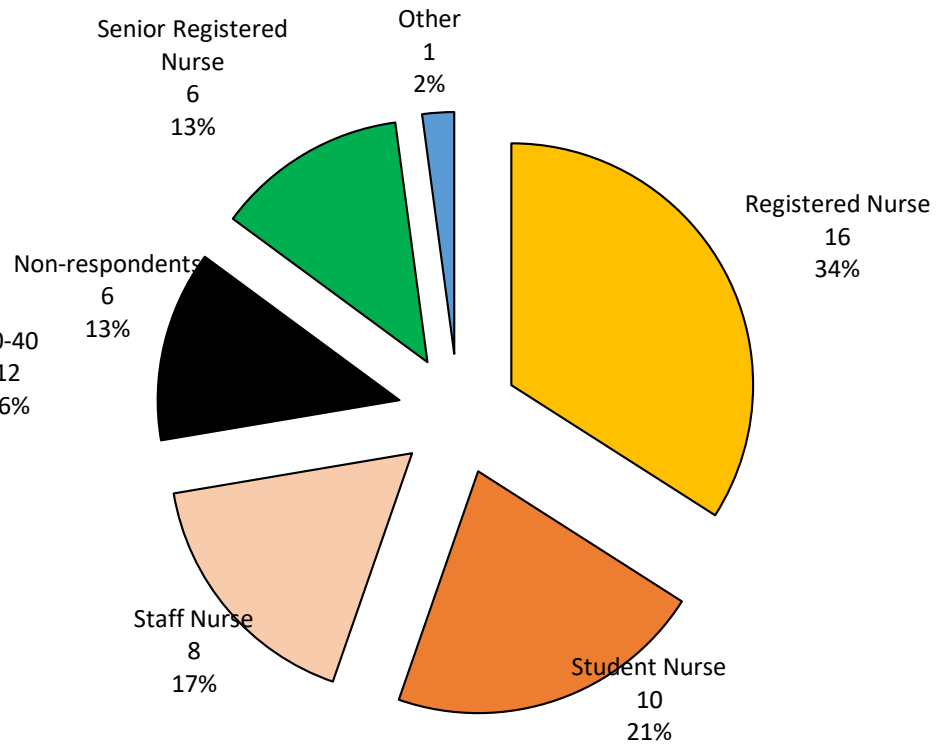
The mean overall knowledge score on diabetes was 23.83 out of a maximum score of thirty-three (33). Twenty-three respondents had moderate knowledge, with scores between Fifty (50%) and Sixty percent (60%); Twelve (12) respondents had 'good' knowledge scores, with scores above Seventy percent (>70%); Twelve (12) respondents had scores below Fifty percent (<50%) which means they had 'poor' knowledge on diabetes.

The total scores of attitude and practices were equated to 100 %. More than 70% of the respondents had a positive attitude. Of the seventeen (17) practice statements, more than 70% of the respondents reported good practices on fourteen (14) of the practices statements. These findings indicate an overall good practice of nurses towards Diabetes Mellitus and diabetic patients.

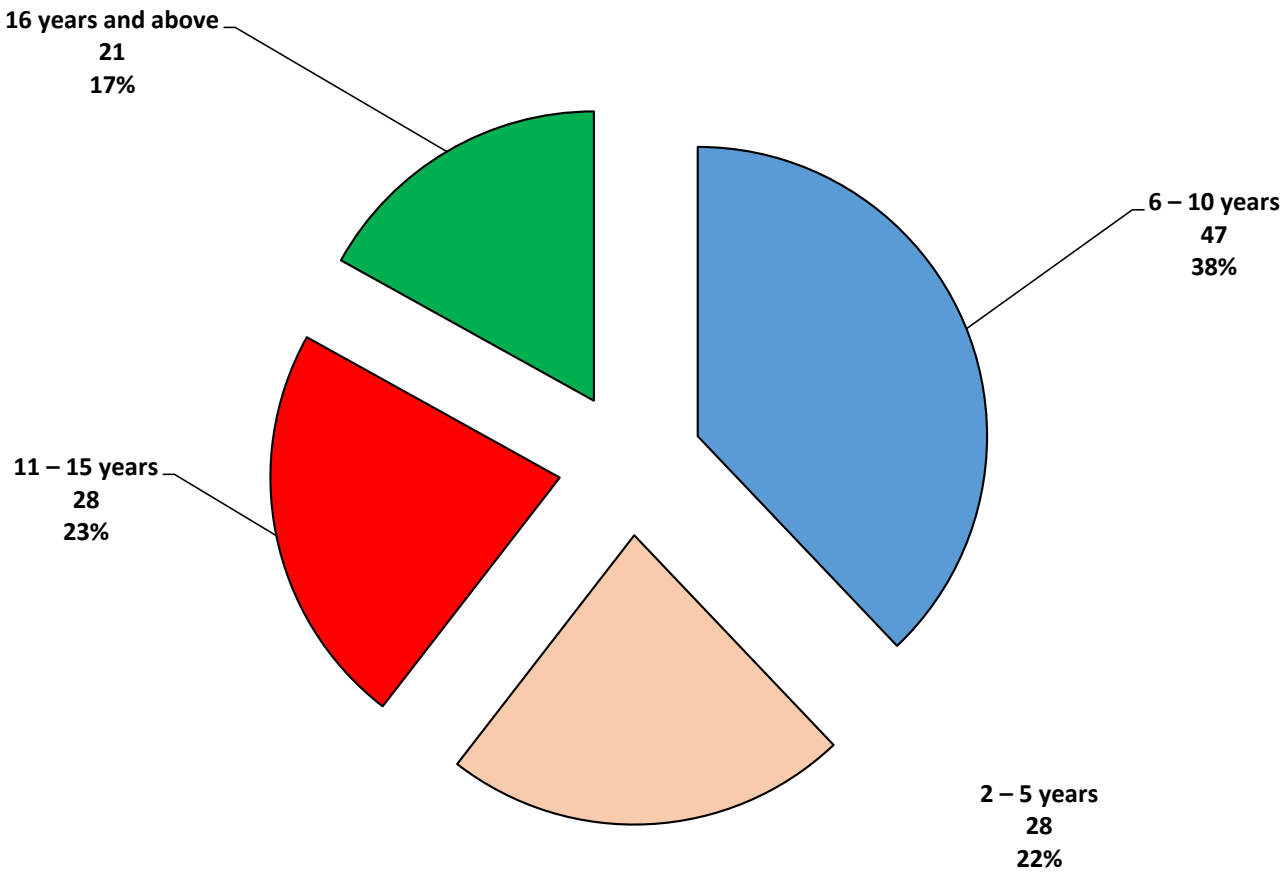
Pie Chart for Age of Participants

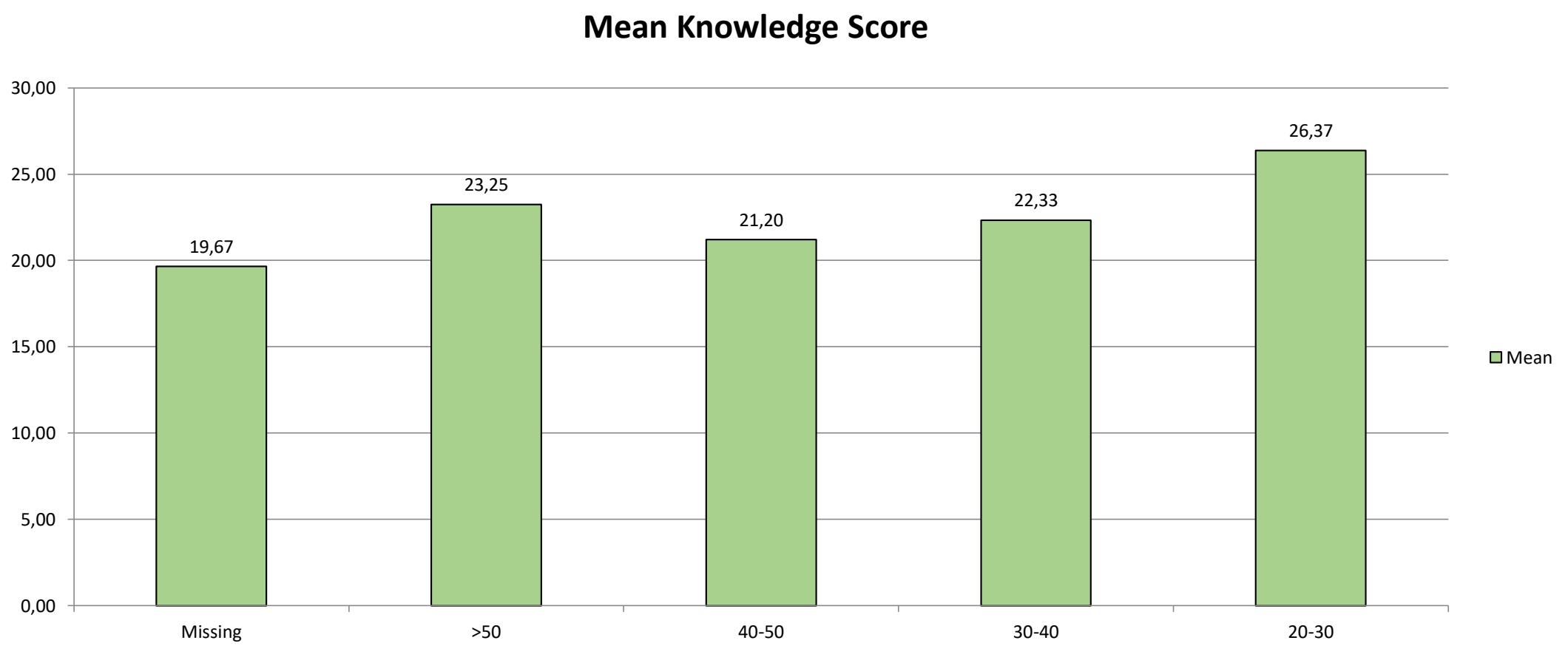


Pie Chart for Professional Level

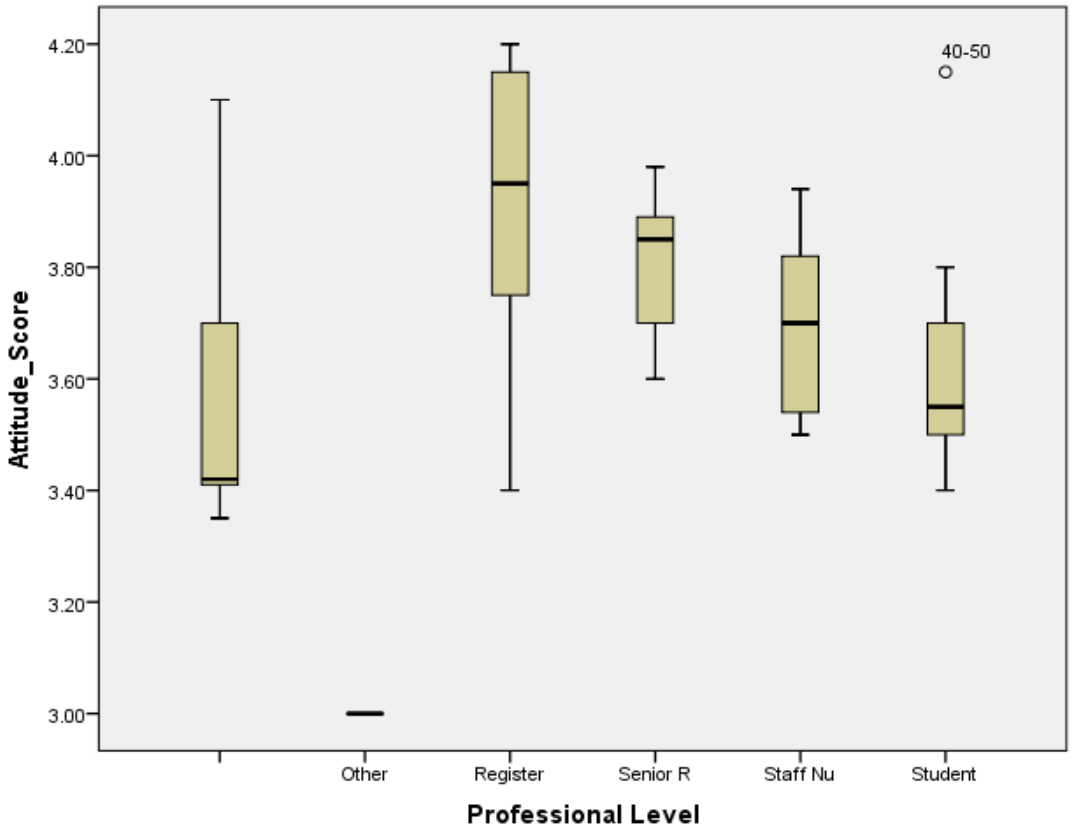


Pie Chart for for Length of service after Qualification




Mean Knowledge Score
30,00
25,00
20,00
15,00
10,00
5,00
0,00
19,67
23,25
21,20
22,33
26,37
Missing
>50
40-50
30-40
20-30
Mean

measures of dispersion for attitude scores versus demographics



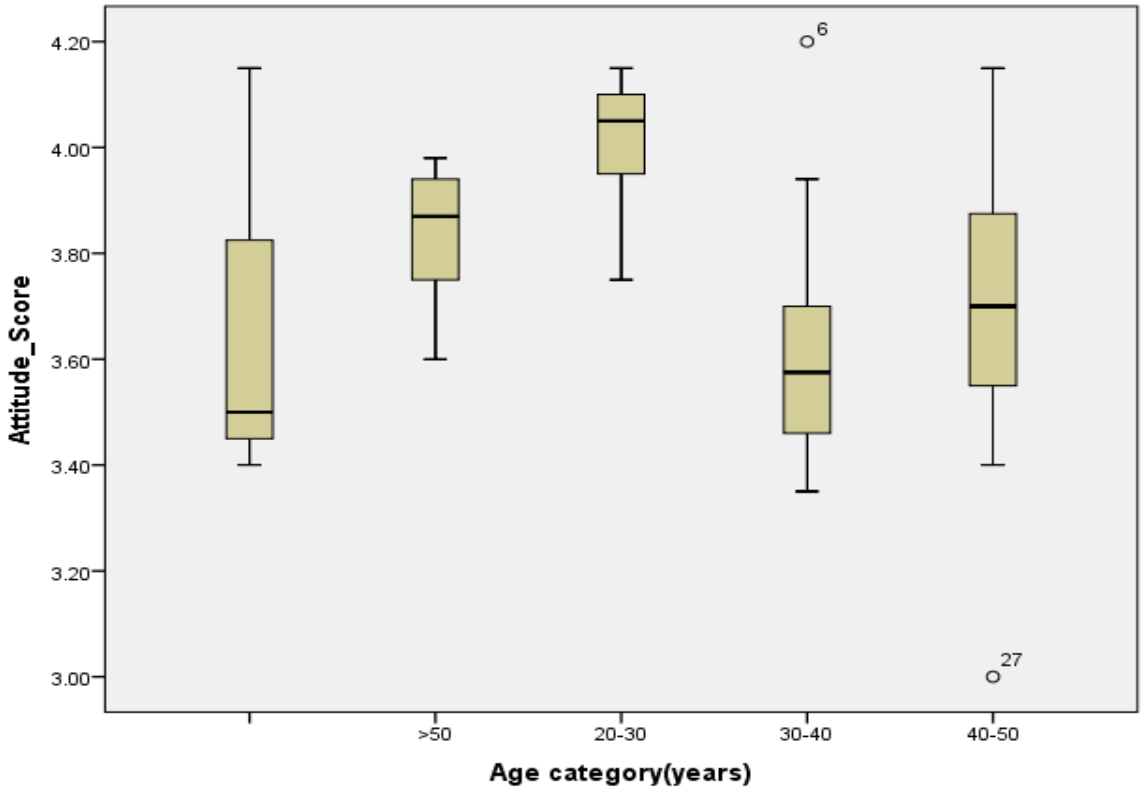


Table 2. Knowledge score and independent variables (n=47)

Variable		Knowledge				Attitude		Practices			
	n	Good K*	P-values	Significantly different level	P-values (sig factor levels only)	Positive A*	P-values	Good P*	P-values	Significantly different level	P-values (sig factor levels only)
Age group											
missing	3	2				2		0			
>50 years	8	4				6		7		40-50 years	0.038
40-50 years	5	4	0.021	40-50 years	0,052	3	0.134	4	0.011	>50 years	0.009
30-40 years	12	9		30-40 years	0,052	11		10		30-40 years	0.038
20-30 years	19	16		>50	0,055	18		17			
Professional level											
Registered nurses	16	10				12		14			
Senior registered nurses	6	5	0.259			4	0.055	3	0.962		
Staff nurses	8	6				7		6			
Student nurses	10	8				7		8			
Other	7	6				5		6			
Years of clinical experience											
<2	10	8		< 2 years	0,021	8		9			
2-5	7	6				5		5			
6-10	10	8	0.026	6-10 years	0,021	7	0.588	9	0.661		
11-15	10	7				7		8			
≥16	10	6				8		7			

Discussion

The study findings on *Knowledge gaps* were similar to those of Alotaibi et al., (2018) that show significant knowledge gaps in DM care. Nurses showed suboptimal knowledge in relation to insulin therapy, oral diabetes medications, nutrition, blood-glucose monitoring, complications and management of symptoms. The findings of this study show that the overall knowledge score was moderate and certain areas of DM management were still a problem.

Our findings were similar to other studies that nurses have generally a positive attitude towards diabetic patients (Bilal et al, 2018, Van Zyl & Rheeder, 2008). The disappointing finding was that only 2.1% of the Participants were aware of the fact that DM changes a person's outlook on life. A study by Bilal et al found that the diagnosis of DM was devastating and life changing for most patients (Bilal et al,2018).

Our findings that nurses' practices were reasonably satisfactory (67.1%) were contrary to a number of studies where practices were not satisfactory. A study by Bilal et al., (2018) revealed the lack of evidence-based practice among nurses managing diabetic patients with complications. A survey by Abdullah and Wadaani on nursing students in Saudi Arabia identified the need for improvement in their practices for preventing and treating patients with diabetic ocular diseases (Abdullah & Wadaani, 2016).

The statistically significant relationships that were found between respondents' knowledge, age and practices implied that younger respondents (20-30 years) are more knowledgeable but have poor practices. This might mean that younger professionals recall theory better. Niroomand et al. (2017), found that with Iranian Interns, the participants' age showed significant negative correlation with their knowledge, attitude, and practices.

Conclusion

The study findings show that clinic nurses in Tzaneen have average knowledge, positive attitude and acceptable practices regarding DM. Nurses were found to have knowledge gaps on oral diabetes medications, complications of DM, blood-glucose monitoring and insulin therapy.

The study also showed that there was a clinically significant association between knowledge and age, as well as knowledge and years of clinical experience. Younger nurses were more knowledgeable than older nurses.

Although respondents had positive attitude, their attitude on DM as a serious disease and the impact it has on a patient's life was negative. Similarly, most respondents had good practices. However, there were gaps in certain practices relating to insulin therapy and timing of meals to prevent hypoglycaemia.

These findings suggest deficiencies in training. It highlights the need to review and improve on current DM education and training. Respondents' variety in KAP scores and associated factors indicate that a multimodal, multifaceted improvement approach should be undertaken to address the gaps in knowledge, attitude and practices regarding DM.

Limitations

It is recommended that a tool to monitor the use of recommended clinical practice guidelines (PHC Essential Drug List) by all nurses should be developed to ensure that all nurses in clinics can manage patients with DM using the guidelines.

In-service training and awareness programmes should be planned to update nurses on the latest information regarding DM management and also to refresh their knowledge on screening, effective treatment of diabetes and prevention of complications.

Administrative regulations should be implemented and favourable working environment created to help Primary Health Care nurses provide reasonable evidence-based promotive, preventive and therapeutic services to diabetic patients.

A collaborative relationship between nurses and doctors should be nurtured to improve the knowledge, attitudes and practice of nurses regarding DM.

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