ORIGINAL ARTICLE

Knowledge, Attitude and Practice (KAP) of Diabetes Mellitus among Rohingya Refugees Attending Imaret Mobile Clinic

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ABSTRACT

Introduction: Around 100,000 Rohingya refugees have migrated to Malaysia since 1978 and developed diabetes mellitus (DM) over time. DM is a serious chronic disease that requires self-management to reduce its complications. There lies a concern here in an already vulnerable population. Objectives: To determine the knowledge, attitude and practice (KAP) of DM among Rohingya refugees attending IMARET mobile clinic, Selayang. **Materials and methods:** The study was a cross sectional study utilizing structured questionnaires and respondents were interviewed with the help of a translator. Data was analyzed using SPSS version 25.0. Independent t-test, ANOVA test and correlations test were used. **Results:** A total of 56 respondents participated in this study. Majority of respondents was female (73.2%), in age group between 31-40 years, married (83.9%), and around a fifth, 21.4% had diabetes mellitus. There were significant differences of knowledge between respondents with history of diabetes mellitus ($p<0.001$). There was significance in respondents attitude score in history of DM ($p<0.001$) with marital status ($p=0.008$) as well as differences in practice score of history of DM ($p=0.039$) with different occupations ($p=0.037$). **Conclusion:** There was a moderate score of knowledge, good positive attitude, and moderate score of practice towards diabetes mellitus. Adequate DM health education to non-DM and DM care to Rohingya refugees may reduce complications and avert further distresses to their quality of life.

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Keywords: Rohingya refugee, Refugee, Diabetes mellitus, Knowledge, Attitude, Practice, IMARET mobile clinic

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INTRODUCTION

The Rohingyas are a Muslim ethnic minority of the Rakhine State in Myanmar [1]. Since 1978, around 100,000 Forcibly Displaced Myanmar Nationals (FDMNs) or Rohingya refugees have fled Myanmar to reside in different states in Malaysia [2]. As Malaysia is not a state party to the 1951 Refugee Convention and its 1967 Protocol, Rohingya refugees do not have any legal status and have limited access to government medical and healthcare facilities [3]. In response to this public health concern, IMAM Response and Relief Team (IMARET), a medical nongovernmental organisation has established mobile clinics with permanents setting such

as at Selayang, Selangor. It provides medical check-up, health screening and health education for the Rohingya refugees every month for Rohingya refugees.

Diabetes mellitus (DM) mellitus is one of the foremost fastest growing non-communicable diseases (NCDs) posing major risks to international public health [4]. The most concerning NCDs in urban refugee population is diabetes mellitus along with CVD and chronic respiratory disease with prevalence of diabetes mellitus among refugees in Malaysia as 6% [5]. As Rohingya refugees are a vulnerable population already with lack of access in the medical healthcare system and DM management reliant on self-management and awareness, it is important to assess Rohingya refugees' knowledge, attitude and practice regarding diabetes mellitus. The study will serve as beneficial documentation to provide suggestions for IMARET to screen those at risk based on factors elucidated here and devise improved counselling

on DM disease management.

MATERIALS AND METHODS

Study Design and Setting

The study was conducted by convenience sampling of Rohingya refugees at IMARET mobile clinic, Human Aid Selangor Society, Selayang, Selangor from January 2019 to December 2019. The data for the study was collected via patient interview in the presence of a competent translator. Inclusion criteria were Rohingya refugees who stayed in Malaysia and attended IMARET Mobile Clinics in Selayang, Selangor. The exclusion criteria for this study were refugees aged below 18 years and respondents that were involved in the pilot study. A pilot study involved 8 participants of Rohingya refugee at IMARET mobile clinics. Modifications to questionnaire were made post pilot. Reliability of the questionnaire was tested and Cronbach's alpha for knowledge, attitude and practice was 0.796, 0.843 and 0.755 respectively.

A structured questionnaire was adopted and adapted from a previous study of Al-Naggar et al. [7]. The questionnaire was divided into four main sections, with 6 questions on knowledge, 7 questions on attitude and 11 questions for the practices regarding diabetes mellitus. For the six questions relating to knowledge, the maximum attainable score was '6' and the minimum score was '0'. "Yes" answers were considered as correctly answered and assigned a score of '1'. "No" answers were considered as not answered correctly and assigned as a score of '0'. The level of knowledge was classified according to Mohammadi et al. [8]. Good knowledge corresponded to 75% and above with a score of 5-6. Average knowledge was 51-74% with a score of 3-4. Poor knowledge referred to 50 % or less with a score of 0-2. The scoring applied for practice consisted of 11 questions, such as blood glucose monitoring, exercise, and groupings of foods intake had a maximum attainable score of '11' and a minimum of '0'. A score of 9-11 was categorized as 'Good Practice'; 6-8 'Moderate Practice' and 0–5 'Poor Practice'. The attitude part was scored using five -point Likert scales with 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree [8]. In the same manner, the scoring is also applied for the practice part that consisted of 11 questions, such as blood glucose monitoring, exercise and groupings of foods intake the maximum attainable score was '11' and minimum was '0'. A score of 9-11 was considered 'Good Practice'; a score of 6-8 'Moderate Practice' and 0–5 'Poor practice. For the attitude part, five point Likert scales with 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree [9]. Score more than mean score of the total attitude score was categorized as positive attitude with a score of 27-35 and a score of 0-26 was considered as negative attitude [10]. Responses were summarised, those with a mean score (a score of 27-35) of the total attitude score were categorised as "positive attitude" and those with a score of 0-26 were

categorised as "negative attitude".

Data Analysis

Analysis of data was done by IBM SPSS (Statistical Package for Social Sciences) Statistics software version 25. Respondent's socio-demographic characteristics were stated using descriptive statistics. The demographic data includes gender, age, marital status, occupation, and medical history. Independent t-test and ANOVA was used to compare knowledge score and demographic characteristics. Pearson test was used to correlate knowledge with attitude and knowledge with practice. The level of statistical significance was set as $p < 0.05$.

Ethical Approval and Consent to Participate

The study was approved by the CUCMS Research Ethics Review Committee Committee No. CUCMS/CRERC/ER/210. Respondents were verbally informed on consent to participate in this study. IMARET granted permission for the IMARET Mobile Clinic to be used to conduct the study for its entire duration.

RESULTS

Demographic Data

A total of 56 respondents participated in this study, of which the majority were female 41 (73.2%), male 15 (26.8%), 83.9% married, 12.5% single and 3.6% divorced. Most respondents (42.9%) were aged 31-40 years, followed by age 18-30 years (33.9%), 41-50 years (14.3%) and (8.9%) were above 50 years of age. The mean ±SD age was 34.3 ± 9.67 years. Housewives comprised 57.1 % of the respondents. About 7.1% were a market-sellers, 5.4% factory workers, 17.9% were others comprising cleaner, car mechanic, grass cutter, janitor, and teacher. Approximately 12.5% were unemployed.

Table I: Respondents demographic characteristics (N=56)

Demographic characteristics	n (%)
Gender	
Male	15 (26.80)
Female	41 (73.20)
Marital status	
Married	47 (83.8)
Single	7 (12.5)
Divorced	2 (3.6)
Age	
18-30	19 (33.9)
31-40	24 (42.9)
41-50	8 (14.3)
>50	5 (8.9)
Occupation	
Housewife	32 (57.1)
Market seller	4 (7.1)
Factory worker	3 (5.4)
Unemployed	7 (12.5)
Others	10 (17.9)
Medical History	
Diabetes Mellitus	12(21.4)
Hypertension	10(17.9)
Dyslipidaemia	1(1.8)
Heart disease	1(1.8)
None	38(67.9)

Knowledge, Attitude and Practice on Diabetes mellitus
About 91.1% (n=51) of the Rohingya refugees knew about diabetes mellitus. However, many of the respondents did not know the symptoms and complications of the disease with frequencies of 80.4% and 67.9% respectively. More than half (64.3%) of the participants did not know normal blood sugar levels but knew that DM can be controlled (66.1%). The majority (78.6%) knew the importance of diet control and exercise to control DM. Almost half, 48.2% agreed that diabetes mellitus is preventable. Fewer (33.9%) of the respondents still believed that diabetes mellitus was treatable. Half of the respondents agreed that regular exercise aids in controlling DM (50.0%). Approximately 62% of the study participants had checked their blood sugar level before. The practices regarding physical activity on exercise were found to be poor. All participants consume carbohydrate rich foods.

Table II Level of knowledge, attitude and practice (N=56)

Items	n(%)	Mean score ±SD
Knowledge		
Poor: <3 (<50%)	18 (32.1)	
Moderate: 3-4 (51%-74%)	22 (39.3)	3.2679±1.81
Good: >4 (>75%)	16 (28.6)	
Attitude		
Negative: 0-26	24 (42.9)	26.8571±2.75
Positive: 27-35	32 (57.1)	
Practice		
Poor: <6 (<50%)	5 (8.9)	
Moderate: 6-8 (51%-74%)	46 (82.1)	6.9464±1.21
Good: >8 (>75%)	5 (8.9)	

Knowledge, Attitude and Practice Classification
Knowledge levels of respondents was good (28.6%), moderate (39.3%) and poor (32.1%). Majority of patients (57.1%) had positive attitude and 42.9% negative attitude. For practice level, 8.9% had good practice, 82.1% had moderate practice, and 8.9% had poor practice.

Table III: Attitude score and demographic characteristics (N=56)

Variables	n	Mean SD	Mean Diff. (95% CI)	p-value
Gender				
Male	15	27.60 (2.23)	1.01 (-0.64, 2.67)	0.224[a]
Female	41	26.59 (6.20)		
Marital status				
Married	47	27.28 (2.37)	2.61 (0.72, 4.50)	0.008[a]
Single	9	24.67 (3.61)		
History of diabetes mellitus				
DM	12	29.50 (1.73)	3.36 (1.80, 4.92)	<0.001[a]
Non-DM	44	26.14 (2.53)		

CONTINUE

Table III: Attitude score and demographic characteristics (N=56) (CONT.)

Variables	n	Mean SD	F-stats (df)	p-value
Age				
18-30	19	26.53 (2.87)		
31-40	24	26.75 (2.66)	0.398 (3; 52)	0.755[b]
41-50	8	27.75 (3.37)		
>50	5	27.20 (1.92)		
Occupation				
Housewife	32	26.88 (2.88)		
Market seller	4	27.75 (2.63)		
Factory worker	3	27.33 (1.15)	0.489 (4; 51)	0.744[b]
Other	10	25.90 (3.14)		
Not working	7	27.43 (2.23)		

Table IV: Practice score and demographic characteristics (N=56)

Variables	n	Mean SD	Mean Diff. (95% CI)	p-value
Gender				
Male	15	6.73 (1.10)	-0.29 (-1.03, 0.44)	0.431[a]
Female	41	7.02 (1.25)		
Marital status				
Married	47	6.98 (1.24)	0.20 (-0.69, 1.09)	0.653[a]
Single	9	6.78 (1.09)		
History of diabetes mellitus				
DM	12	7.58 (1.08)	0.81 (0.04, 1.58)	0.039[a]
Non-DM	44	6.77 (1.20)		

Variables	n	Mean SD	F-stats (df)	p-value
Age				
18-30	19	6.74 (1.48)		
31-40	24	6.79 (1.02)	2.558 (3; 52)	0.065[b]
41-50	8	8.00 (0.76)		
>50	5	6.80 (0.84)		
Occupation				
Housewife	32	7.16 (1.22)		
Market seller	4	7.25 (0.96)		
Factory worker	3	8.00 (1.00)	0.348 (4; 51)	0.037[b]
Other	10	6.00 (1.05)		
Not working	7	6.71 (0.95)		

[a]Independent t-test, [b]ANOVA test , p< 0.05 shows statistical significance.

Mean differences between demographic data and each item
There were significant differences in knowledge scores between diabetic and non-diabetic respondents (p<0.001). DM respondents have higher mean knowledge scores compared to non-DM respondents. There were significant differences in attitude scores between marital status (p=0.008) and history of diabetes mellitus

(p<0.001). Married respondents had a significantly higher mean attitude score than single respondents. Respondents with diabetes mellitus had a significantly higher mean attitude score than those without diabetes mellitus. There were statistically significant differences in practice scores among occupation (p=0.037) and between diabetic and non-diabetic (p<0.001). Factory workers had a significantly higher mean attitude score than those working elsewhere such as a housewife and market-seller and those who were not working.

Table V: Correlation between score of Knowledge and scores of Attitude/ Practice

Variable	N	Pearson correlation coefficient, r	p-value	Correlation strength
Attitude	56	0.683	0.001[a]	Strong
Practice	56	0.296	0.027[a]	Weak

[a]Pearson correlation coefficient test, p< 0.05 shows statistical significance.

DISCUSSION

About 39.3% of respondents had moderate knowledge. This was similar to KAP study done in Sri Lanka [11]. The majority of the Rohingya refugees attending IMARET mobile clinic had general knowledge on diabetes mellitus and believe that diabetes mellitus can be controlled through diet control and exercise. However, their general knowledge of symptoms and complications of diabetes mellitus (DM) was relatively low. This suggests that there is a need for preventive measures and more education as knowledge is important to facilitate early detection of disease and lessen complications. Majority of respondents (57.1%) had a positive attitude towards diabetes mellitus, namely, that diabetes mellitus is preventable and recognized the importance of diabetes mellitus care. This echoed a prior Malaysian study where 97.5% of their respondents had a positive attitude [12]. With regards to practice, analysis showed majority (82.1%) of respondents conducted frequent regular check-ups and maintained a healthy diet but lacked daily exercise.

Those with a history of diabetes mellitus had better knowledge than non-diabetics, similar with a study conducted in Nepal among diabetic patients and non-diabetic population visiting diabetic OPD of Tribhuvan University Teaching Hospital (TUTH) [13]. Several factors could influence this, including personal experiences, exposure to health information, and the influence of their social support system. Refugees who have personally experienced diabetes or have close family members affected by DM may have a deeper understanding of its symptoms, management, and complications. Personal experiences with diabetes can shape one's attitudes towards the disease, leading to increased awareness and proactive health-seeking behaviors. For Rohingya refugees who have witnessed the effects of diabetes firsthand within their community, this could foster a sense of urgency in addressing the

condition and adopting healthier lifestyles. The attitude of diabetes mellitus varied significantly with marital status (p=0.008) and history of diabetes mellitus (p<0.001). Akinci et al. established that married individuals showed significantly better health-related quality of life, better well-being, and fewer impacts of diabetes mellitus [14]. This demonstrates that most patients experience decent assistance through their social support systems. Those with history of diabetes mellitus showed significantly higher mean attitude score than non-diabetics, something supported by a study by Raj et al [15]. A strong positive correlation between knowledge and attitude existed. In this study, majority of Rohingya refugees had frequent regular check-ups and adopted a healthy diet in their daily lives although the expressed consuming carbohydrate rich foods as this is less costly. The attitude of Rohingya refugees on dietary modification, monitoring blood sugar level and diabetic medication for diabetes mellitus control was acceptable in the majority. However, 80.4% of refuges had poor physical activity (exercise). This was likely due to their less favourable economic status. They have other competing interests such as managing their children and household. In addition, urban environments in developing countries are difficult for refugees, who usually live in poorer housing conditions, which increase the risk of developing DM due to less recreational access and their worries of free movement due to their status [17].

This study showed that occupation (p=0.037) and history of diabetes mellitus (p=0.039) have significant associations to practice scores towards diabetes mellitus. Factory workers showed a higher mean score compared to housewife, market-seller and those who were not working. There existed a strong and positive correlation (r=0.683, p=0.001) between knowledge and attitude score. A similar finding in another study done at a hospital in South Africa among 217 diabetic patients showed that there was a positive correlation between knowledge and attitude score toward diabetes mellitus [18]. The positive correlation between the score of knowledge and the score of attitudes of participants indicates that the higher the knowledge the better their attitude is towards diabetes [6]. Individuals with higher knowledge levels may feel more empowered and positive towards managing diabetes. There was a weak positive correlation between knowledge and practice score. More education emphasizing importance of exercise and healthier eating in a culturally sensitive manner could improve this.As basic treatment tool for DM includes self-management and education it is vital that more efforts be made in delivering DM awareness program in a more engaging manner such as community engagement, storytelling and peer support groups especially since since the Rohingya population does not have their own's specific languages in written form. Rohingya women are not employed outside the home and may require ambassadors of health from their

community to engage with them on health education matters. Factors such as access to healthcare services, affordability of medication, dietary habits, and social support networks influence diabetes-related practices are a challenge for refugees. Health care professionals also lack of direct communication with refugees due to language barrier and this may affect DM education. In addition, complication of disease progression is a concern as insulin which is primarily listed in Clinical Practice Guidelines is not prescribed for them at the IMARET clinic due to logistical cold chain issues [3]. Timely treatment of diabetes and regular screening for complications can reduce or delay the complications of diabetes by as much as 50% [19].

CONCLUSION

In relation to diabetes mellitus, the Rohingya refugees who attended the IMARET mobile clinic in Selayang illustrated moderate scores in both the knowledge and positive attitude criteria. They also displayed moderate levels of practice. Aside from this, the collected data highlights significant differences of knowledge regarding those with diabetes mellitus. There were also significant mean differences when it came to the attitude scores between history of DM and marital status respondents. The same type of significant mean difference can be seen in relation to the practice scores between history of DM and respondents with certain types of occupations. Thus, adequate knowledge, a positive attitude and good practices are important for effective control of diabetes mellitus. Rohingya refugees are a vulnerable group due to lack of access to affordable health care. IMARET's regular monthly medical aid and education on DM can improve overall awareness and promote positive health practice behaviors but reliant on consistent and sustainable healthcare professional staffing and translators for ease of communication with the patients. It is important for Rohingya refugees to fully understand the nature of the DM disease thereby reduceing complications and avert further distresses to their quality of life.

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