

Research Article

Prevalence and Determinants of Appropriate Health Seeking Behaviour among Known Diabetics: Results from a Community-Based Survey

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Introduction. Living with diabetes requires patients to have good self-monitoring of their disease and treatment. Appropriate health seeking behavior is important to minimize complications and improve quality of life. *Methodology.* A community-based, cross-sectional study of disease events and experiences from diagnosis to the time of study was conducted among 460 known diabetics in Tanjong Karang district. The aim of this study was to describe the current pattern of health seeking behavior and its determinants among rural communities. Appropriate diabetic health services utilization was defined as using modern treatment either through oral hypoglycemics or insulin injections, obtained from either a public or private health facility. *Result.* 85.9% of respondents reported having appropriate health seeking behaviour at the time of the house-to-house community survey. Multivariate logistic regression analysis revealed that appropriate health seeking behaviour was significantly associated with age of respondent, presence of comorbidity, family history of diabetes, distance from health facilities, perceived family support, and history of early treatment seeking at diagnosis and duration of disease. *Conclusion.* The present population has better appropriate health seeking behavior and provision of knowledge with strong family support in diabetic care which are important in control and prevention of diabetic complication that need to be emphasized.

1. Introduction

Diabetes is now regarded as a major public health problem all over the world [1]. The prevalence of diabetes mellitus is reaching epidemic levels worldwide [2, 3]. The World Health Organization (WHO) estimated that the number of people with diabetes mellitus is expected to rise from 171 million in 2000 to 366 million in 2030, as a result of population ageing and urbanization [4]. In Singapore, diabetes mellitus is the 8th leading cause of death with 3% of all deaths being attributable to diabetes alone [5, 6]. In Malaysia, the World Health Organisation has estimated that in 2030, our country would have a total number of 2.48 million people with diabetes compared to 0.94 million in 2000 [7]. Prevalence of people with diabetes aged more than 18 years old increased from 11.6% in 2006 to 15.2% in 2011 [8].

Health seeking behaviour are directly related to disease incidence, prevalence and complication. Early recognition of symptom, presentation to healthcare facilities, and compliance with effective treatment can reduce morbidity and thereby mortality [9]. Diabetes is a common disease causing significant morbidity and mortality; thus appropriate health seeking behaviour may help to plan diabetes care and management upon diagnosis so that complication can be minimized and quality of life can be improved. Malaysia is currently experiencing a tremendous increase in prevalence of diabetes mellitus, which presents a great challenge to the Ministry of Health, Malaysia, for designing health care policies and programmes.

Health Seeking Behaviour. The definition of health seeking behaviour is often considered vague and difficult to define.

There is no common definition agreed upon by sociologists in any sociology literature. Different definition may be used in different studies, despite referring to the same activity. According to sociology literature, health care seeking behaviour will be influenced by the individual self, diseases, and the availability and accessibility of health services. Depending on these determinants and their interactions [10, 11], health care seeking behaviour is a complex outcome of many factors operating at individual, family, and community level. Treatment choices would involve many factors related to illness type and severity, sociodemographic characteristics, preexisting beliefs about illness causation, accessibility of treatment available and their perceived efficacy and disease profile [12].

Appropriate health seeking behaviours among people with diabetes in this study are defined as seeking modern/conventional treatment either through oral hypoglycemics or through insulin injections, from public or private health facilities (hospital and clinic) [13]. The use of unconventional treatment is gaining considerable recognition and popularity worldwide. Use of nonmodern/unconventional treatment especially complementary and alternative medicine is common among people with diabetes, and often they may not inform their doctors of their use [12]. It is important to know the usage of unconventional treatment because interaction with conventional treatment may occur. It may even cause severe adverse reaction leading to significant morbidity and mortality [14].

Since the 1970s, the Ministry of Health, Malaysia, has taken important steps to develop a good network of health care services in the country. A total of 97% of the citizens have access to health services with the majority having access to a health care system within a 3 km radius from their residence. In East Malaysia, more than 50% of the rural population has access to health services within a 5 km radius from their residence [15]. Despite having good network of health care services, prevalence of seeking care for the illness is still low. Among respondents aged 30 years and above, 92.9 percent among people with diabetes are seeking treatment from health facilities whereas 7.1 percent did not seek any diabetic treatment for their diabetic [16].

In Malaysia, information regarding the pattern of behaviour among people with diabetes in seeking health and their utilisation of modern treatment and health facilities is limited. Significant nationwide studies on patterns in utilization of health services and its contributing factors in Malaysia are limited. Research done in 2009 showed that, in health services in Malaysia that are still under utilisation, only 33 percents of respondent had contact with health care professional [17]. Study done by National Health and Morbidity Survey in 2006 also showed similar findings. Only 59.3 percent of respondents are seeking treatment for their illnesses [16]. The objective of this study therefore is to understand current pattern of health seeking behaviour and particularly to determine factors influencing health seeking behaviour known among people with diabetes in Tanjong Karang, Selangor.

2. Materials and Methods

2.1. Study Design. A cross-sectional study was conducted in selected communities in Tanjong Karang between October 2011 and April 2012. Tanjong Karang was purposely chosen whereby simple random sampling method was used to choose 17 villages. Household survey was done prior to the study to identify people with diabetes. A simple random sampling was used to select respondents who had diabetes from the household survey.

2.2. Sample Size. The sample size calculations were done using Power and Sample Size Calculation software. A single proportion formula (Fleiss formula) was used. Calculations were done for all possible variables and the biggest sample size was chosen. The minimum sample size required were 460 (precision level of 0.07, the value of normal standard distribution of 1.96, power of 80%).

2.3. Inclusion Criteria

- (a) Villagers from Tanjong Karang who self-reported having diabetes mellitus (types 1 and 2).
- (b) Age \geq 18 years old.
- (c) Able to read, write, communicate, and understand Bahasa Malaysia.
- (d) Agree to participate

2.4. Data Collection. Data were collected by mean of structured face to face interview. People with diabetes were interviewed using a structured validated questionnaire without disturbance in the privacy of their own homes. In order to validate the content of the questionnaires, comments and suggestions from a group of experts including two public health lecturers and one endocrinologist were reviewed. Following the content validity, face validity was carried out. Ten villagers were interviewed with the questionnaires. A few wordings had been changed after the session to improve the contents of the questionnaires. The questionnaire was then piloted among 40 villagers from Kampung Bestari Jaya, Kuala Selangor. It consists of 59 items grouped into 6 domains composed of six parts which were social demographic profile, disease profile, knowledge of diabetes mellitus, perception of diabetes mellitus, family support, and health seeking behaviour. Result of validation shows that the constructed validity and reliability were optimal. Cronbach alpha coefficient values for each domain ranged between 0.6 and 0.9.

The following operational definitions were used.

Health seeking behaviour was defined as follows: respondent who reported visiting any health facilities (government or private) and using modern treatment (oral hypoglycaemic agent or insulin therapy). Appropriate health seeking behaviours are defined as respondents seeking modern treatment either through oral hypoglycemics or through insulin injections, from a public or private clinic or hospital [13].

2.5. Ethical Approval. This study was reviewed and approved by the Research and Ethics Committee, National University of Malaysia, Grant no. FF-045-2011.

2.6. Data Analysis. Data entry and statistical analysis were done using SPSS version 20. The continuous variables were recorded as mean and standard deviation (SD). Categorical variables were recorded as frequencies and percentages. Simple logistic regression was used as a screening in selection of variables for further analysis. All variables with *P* value less than 0.20 and clinically relevant variables were included in the multiple logistic regression analysis. The method that was used for variable selection was enter, backward, and forward stepwise procedure. All possible 2-way interactions were checked and those significant variables were included in the model. The independent variables were fitted into multiple logistic regression and multicollinearity was checked. Fitness of model was tested by Hosmer-Lemeshow goodness of fit test, the classification table, and receiver operator characteristic curve. *P* < 0.05 was set as significant level.

3. Results

Out of the 506 respondents visited in the survey, there were a total of 460 respondents, giving a response rate of 90.9%.

3.1. Sociodemographic and Disease Profile of Respondents. A total of 460 villagers were interviewed. The mean age of the respondents was 53.5 ± 13 years, with slightly more females (62.6%). The mean households' size was 4. The median monthly households' income was RM 1000. The majority (84.3%) of villagers had formal education up to secondary level. Majority of respondents were Malays (93.5%), Islam (93.5%), married (79.1%), working (32.4%) and housewife (32.8%) (Table 1).

The majority of respondents reported having diabetes mellitus less than 5 years (47.8%). Most of the respondents were having comorbidity (61.5%) and close family members diagnosed with diabetes mellitus (54.3%). 27% of respondents reported their diabetes being diagnosed by opportunistic medical screening at health facilities and only 26.5% by their own initiatives going to health facilities for medical screening.

Table 2 shows the current pattern of health seeking behaviour. Appropriate health seeking behaviour were classified as respondents seeking treatment within 24 hours upon diagnosis, utilizing health facilities and using modern treatment. Reason for not seeking medical treatment included, able to treat themselves, no time and financial constraints.

Table 3 showed that age of respondent, marital status, educational attainment, employment status, household income, household size, distance from health facilities, transportation, duration of illness, present of co-morbidity, family history of Diabetes mellitus, duration of seeking treatment upon diagnosis, level of family support and perception of diabetes mellitus were associated with health seeking behaviour.

Table 4 presented the adjusted odds ratio for likelihood of appropriate health seeking behaviour. When all predictive variables from the Bivariate analysis were entered in the multivariate analysis, absence of comorbidity (OR 3.15, 95% CI 1.66–5.98), seeking treatment within 24 hours of diagnosis (OR 2.62, 95% CI 1.35–5.07), duration of illness less than 5 years (OR 3.40, 95% CI 1.69–6.08) and those having high

TABLE 1: Sociodemographics and disease profile of the respondents (*N* = 460).

Characteristics	<i>n</i> = 460	(%)
Gender		
Male	172	37.4
Female	288	62.6
Ethnic		
Malay	430	93.5
Chinese	21	4.6
Indian	9	1.9
Religion		
Islamic	430	93.5
Hindu	21	4.6
Buddha	9	1.9
Occupation		
Working	149	32.4
Unemployed	85	18.5
Housewife	151	32.8
Pensioners	70	15.2
Students	5	1.1
Education		
No education	73	15.9
Primary school	155	33.7
Secondary school	182	39.6
University/college	50	10.9
Marital status		
Bachelor	13	2.8
Married	364	79.1
Widowed	23	5.1
Divorced	60	13.1
Duration of illness	Mean \pm (sd) 7.28 (5.65)	
Less than 5 years	220	47.8
5–10 years	120	26.0
11–19 years	98	21.4
>20 years	22	4.8
Comorbidity		
Yes	283	61.5
No	177	38.5
Complication of diabetes mellitus		
Yes	198	43.0
No	262	57.0
Family history of diabetes mellitus		
Yes	250	54.3
No	210	45.7

family support (OR 2.56, 95% CI 1.25–7.69) were determinants for appropriate health seeking behaviour.

4. Discussion

The prevalence of appropriate health seeking behaviour among people with diabetes in Tanjong Karang, Selangor, was 14.6%. There is no reported study on the prevalence

TABLE 2: Current pattern of health seeking behavior.

Characteristics	<i>n</i>	%
Method of DM being diagnosed		
Medical screening at community level	30	6.5
Medical screening at health facilities	124	27.0
Own initiatives	122	26.5
Medical checkup (preemployment/hajj)	36	7.8
Getting treatment for symptom of DM	69	15.0
Admitted to hospital due to complication of DM	47	10.2
Medical screening 6 weeks postpartum.	32	7.0
Seeking treatment upon diagnosis		
Yes	376	81.7
No	84	18.3
Early treatment at diagnosis		
Within 24 hours	222	48.3
After 24 hours	154	33.4
Reason for not/delay in seeking treatment upon diagnosis		
Financial constraint (transport, medicine, and consultation)	46	10.0
No time	114	24.8
Distance from health facilities	26	5.7
Considered that symptoms were not serious enough for treatment	27	5.9
Self-treatment	206	44.8
No treatment	5	1.1
>2 reasons	36	7.8
Utilizing health facilities		
Government hospital	263	57.2
Private hospital	23	5.0
Government clinic	114	24.8
Private clinic	13	2.8
Pharmacy/Chinese shop	7	1.5
Traditional healers	—	—
Homeopathy healers	2	0.4
Self-treatment	30	6.5
No treatment	8	1.7
Using modern treatment		
Oral diabetic agent	308	67.0
Insulin	43	9.3
Oral diabetic agent and insulin	53	11.5
Traditional medicine	4	0.9
Homeopathy medicine	3	0.7
Food supplement	7	1.5
Medicine bought from pharmacy	3	0.7
Medicine bought from Chinese shop	6	1.3
Self-treatment	23	5.0
No treatment	10	2.2
Health seeking behaviour		
Appropriate	395	85.9
Inappropriate	65	14.1

of appropriate health seeking behaviour among people with diabetes in Malaysia. However, the findings are comparable with few studies done in developed and developing countries [18, 19]. A study done by Khongbuh et al., 2005 showed 63.4 % from 495 respondent sought treatment for their diabetics from different type of practitioner [18]. A qualitative study done by Hjelm and Atwine in Uganda also showed that healthcare were mainly sought among doctor and nurses in the professional sector [19].

This study also showed that utilizing the health facilities (89.8%) and using modern medicine (87.8%) for treatment of people with diabetes in Tanjong Karang are still low. This finding is discordant with a previous national study in 2011 where utilizing health facilities (96.9%) and using modern medicine (94.2%) are high [3]. The different observe here most probably due to the differences in methodologies (different approach in data collection, study population, location of studies, and difference in definition of health seeking behaviour).

Previous studies had proved that certain patient and disease factors can predict appropriate health seeking behavior [20, 21]. Gender, age, racial group, income, educational level, and presence of chronic disorder are some predictive factors. The present study has demonstrated that age of respondents, educational level, employment status, mean household income, duration of illness, presence of other illnesses, close family having history of diabetes mellitus, duration of seeking treatment upon diagnosis, family support, and perception severity of disease were determinants of appropriate health seeking behaviour. However, on multivariate analysis, presence of other illnesses, having close family members diagnosed with diabetes mellitus, duration of illness more than 5 years, duration of seeking treatment within 24 hours of diagnosis, and high family support remained as determinants of appropriate health seeking behavior. These findings are comparable with other studies done in the Western population [20] and Asian population [21].

There is a need to have an information regarding health seeking behaviour among people with diabetes particularly related to utilization of health facilities and consuming modern medicine. The information is crucial in order to develop strategies for prevention of complication and adaptation to the treatment. The association of appropriate health seeking behaviour with family members having diabetes mellitus and family support found in this study highlight the potential importance of family empowerment in promoting appropriate health seeking behaviour among people with diabetes.

5. Conclusion

This study revealed that prevalence of seeking appropriate health treatment among people with diabetes in Tanjong Karang, Selangor, is still low. Presence of other illnesses, having close family members diagnosed with diabetes mellitus, duration of illness more than 5 years, duration of seeking treatment within 24 hours of diagnosis, and high family support are determinants of appropriate health seeking behaviour.

TABLE 3: Factors associated with appropriate health seeking behaviour.

Variables	Health seeking behaviour		χ	P value
	Appropriate (n/%)	Inappropriate (n/%)		
Age (years)				
<35	364 (88.3)	48 (11.8)	18.725	<0.001
≥35	31 (64.6)	17 (35.4)		
Sex				
Male	147 (85.5)	25 (14.5)	0.283	0.595
Female	248 (86.1)	40 (13.9)		
Marital status				
Married	307 (84.3)	305 (83.8)	3.786	0.052
Not married (bachelor, widow)	88 (11.7)	88 (91.7)		
Educational level				
High	190 (81.9)	42 (18.1)	5.926	0.015
Low	205 (89.9)	23 (10.1)		
Employment status				
Working	117 (78.5)	32 (21.5)	10.182	0.001
Not working	278 (89.4)	33 (10.6)		
Mean household income (RM)				
<770	152 (91.0)	15 (9.0)	6.568	0.010
≥770	243 (82.9)	50 (17.1)		
Household size (person)				
≥5	138 (83.1)	28 (16.9)	1.761	0.185
<5	257 (87.4)	37 (12.6)		
Distance from health facilities (kilometre)				
≥5	206 (88.0)	28 (16.0)	1.165	0.280
<5	189 (83.6)	37 (16.4)		
Having transportation				
Yes	376 (85.5)	64 (14.5)	1.537	0.215
No	19 (95.0)	1 (5.0)		
Duration of illness (years)				
>5	187 (78.6)	51 (21.4)	21.024	<0.001
≤5	208 (93.7)	14 (6.3)		
Comorbidity				
Yes	131 (74.9)	44 (25.1)	31.181	<0.001
No	264 (92.6)	21 (7.4)		
Family history of diabetes mellitus				
Yes	165 (78.6)	45 (21.4)	18.968	<0.001
No	230 (92.0)	20 (8.0)		
Complication of diabetes mellitus				
Yes	169 (85.4)	29 (14.6)	0.331	0.595
No	226 (86.3)	36 (13.7)		
Early treatment at diagnosis				
Yes	199 (89.6)	23 (10.4)	15.120	<0.001
No	196 (82.4)	42 (17.6)		
Family support				
High	223 (88.1)	30 (11.9)	2.416	0.120
low	172 (83.1)	35 (16.9)		
Knowledge of diabetes mellitus				
Good	226 (85.9)	37 (14.1)	0.122	0.727
Poor	169 (85.8)	28 (14.2)		
Perception of respondent toward risk of getting diabetes				
Positive	152 (84.9)	27 (15.1)	0.219	0.639
Negative	243 (86.5)	38 (15.5)		
Perception of respondent towards personal control				
Positive	133 (82.1)	29 (17.9)	2.930	0.087
Negative	262 (87.9)	36 (12.1)		

TABLE 3: Continued.

Variables	Health seeking behaviour		χ	P value
	Appropriate (n/%)	Inappropriate (n/%)		
Perception of respondent towards benefit and barriers of preventive behaviour				
Positive	81 (87.1)	12 (12.9)	0.145	0.749
Negative	314 (85.6)	53 (14.4)		
Method of DM being diagnosed				
Medical screening at community level	26 (86.7)	4 (13.3)	16.120	0.013
Medical screening at health facilities	115 (92.7)	9 (7.3)		
Own initiatives	103 (84.4)	19 (15.6)		
Medical checkup (preemployment/haji)	27 (75.0)	9 (25.0)		
Getting treatment for symptom of DM	62 (89.9)	7 (10.1)		
Admitted to hospital due to complication of DM	39 (83.0)	8 (17.0)		
Medical screening 6 weeks postpartum	23 (71.9)	9 (28.1)		

TABLE 4: Logistic regression predicting likelihood of appropriate health seeking behavior.

Characteristic	β	SE	WALD	P value	Exp β	95% CI
Constant	2.394	0.346	47.822	< 0.001	10.953	
Age (years)						
≥35					1.00	
<35	0.956	0.420	5.174	0.023	2.60	1.14–5.92
Comorbidity						
Yes					1.00	
No	1.212	0.318	14.527	< 0.001	3.15	1.66–5.98
Family history of diabetes mellitus						
Yes					1.00	
No	1.147	0.328	12.281	< 0.001	3.36	1.80–6.27
Distance from health facilities (kilometre)						
<5					1.00	
≥5	0.699	0.312	5.035	0.025	2.01	1.08–3.70
Seeking treatment upon diagnosis (within 24 hours)						
Yes					2.62	
No	0.962	0.337	8.156	0.004	1.00	1.35–5.07
Duration of illness (years)						
>5					1.00	
≤5	1.222	0.355	11.860	0.001	3.40	1.69–6.08
Complication of diabetes mellitus						
Yes					1.00	
No	-0.584	0.318	3.369	0.066	0.588	0.30–1.04
Family support						
low					1.00	
high	-1.112	0.456	5.949	0.015	2.56	1.25–7.69

$R^2 = 0.789$ (Hosmer and Lemeshow), 0.25 (Cox and Snell), and 0.38 (Nagelkerke). Model χ^2 (28) = 136, $P < 0.001$.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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