A Systematic Review of Knowledge Attitude and Practice [KAP] on Diabetes among Population

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ABSTRACT

Background: This systematic review was undertaken to assess the extent of knowledge, attitude, and practice of diabetic patients in the overall review articles. **Objectives:** This systematic review was undertaken 1) to assess the extent of knowledge, attitude, and practice of the diabetic patients in the overall review articles. 2) to assess the overall demographic character distribution in diabetic patients.3) to identify the overall area of lacking of the diabetic patients which affects the adherence rates of the patients. **Materials and methods**: A systematic literature search was conducted to identify articles containing information on the knowledge attitude and practice regarding diabetes and anti-diabetic medications. The Level 1 screen identified papers related to the main topic of interest. Abstracts passing the Level 1 screen were then retrieved for screening against the inclusion criteria (Level 2 screen). Full articles meeting the inclusion criteria were reviewed in detail (Level 3 screen). **Results:** The above survey provides an idea that there is a diverse characters of the participants which may variously affects the knowledge attitude and practice of the study participants. **Conclusion:** Poor knowledge, a negative attitude and poor practices related to diabetes were observed in a very high percentage of the participants included in this overall review. The poor KAP observed among the participants was very likely to contribute to the morbidity of these patients.

1. INTRODUCTION

India is rapidly emerging as the diabetes capital of the world. Currently, there are approximately 63 million diabetics in India, second only to China, and this figure is likely to increase substantially by 2025. Insulin is mandatory for type 1 diabetes and is frequently required in type 2 diabetes as the disease progresses. Statistics from developed countries show that more than 30% of all diabetics use insulin either singly or in combination with oral anti-diabetic drugs (OADs), though this figure may be lower for India. Inadequate knowledge regarding insulin is likely to influence its acceptance and adherence. Being an injectable drug, its use is more likely to be influenced by misconceptions than OADs. There are several Indian studies with emphasis on diabetes epidemiology but ones related to knowledge-attitude-practice (KAP) survey in diabetics are limited. A large proportion of type 2 diabetics also eventually require insulin for blood sugar control and the assessment of their knowledge and attitude towards insulin, even if not using this drug, was considered important to evaluate the gaps that need to be addressed.[1]

Type 2 diabetes mellitus (T2DM) is a global clinical and public health problem with high morbidity and mortality rates, presenting in patients of whom the majority are still economically active. The growing incidence and health implications for those affected make T2DM a major public health issue.[2]

This systematic review was undertaken 1) to assess the extent of knowledge, attitude, practice of diabetic patients in the overall review articles. 2) to assess the overall demographic character distribution in diabetic patients.3) to identify the overall area of lacking of the diabetic patients which affects the adherence rates of the patients.

2. RESEARCH DESIGN AND METHODS

2.1. Literature search

A systematic literature search was conducted to identify articles containing information on the knowledge attitude and practice regarding diabetes and anti-diabetic medications. Abstracts captured by the systematic literature search of SCIENCE DIRECT (2002 to 2019), databases were first screened against the protocol inclusion criteria.

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The Level 1 screen identified papers related to the main topic of interest. Abstracts passing the Level 1 screen were then retrieved for screening against the inclusion criteria (Level 2 screen). Full articles meeting the inclusion criteria were reviewed in detail (Level 3 screen).

2.2. Inclusion criteria

Papers were included in this review if *1*) demographic data and the various other categories were reported and *2*) study design and methods for calculation of KAP were described. The papers must have included details of the methods used to determine KAP with various characters and some numeric results. Categorical results were considered a lower level of information than data. The most desirable reports included both KAP and BMI levels. Reports of interventions that did not include KAP rates were excluded. Reports of e with KAP that did not include demographic characters were also excluded. Reports may be retrospective surveys, prospective clinical trials, or prospective studies. Methods may be cross sectional analyses of populations or interview of individual patients.

2.3. Search strategy

Keywords for the database search were "KNOWLEGE" and "ATTITUDE" cross-linked with "diabetes mellitus," "PRACTICE". Within the terms, sub-items were selected as a survey, cross sectional study, review, as available for each term. The databases identified 186,188 publications. Level 1 searches combining terms identified 65 publications that appeared to relate to the topic of interest. Level 2 was a review of abstracts from the reports identified in Level 1, using the inclusion criteria. This stage identified 38 reports as potentially having relevant data. Level 3 was a review of the papers identified in Level 2. These citations were supplemented with selected references from articles. This stage identified 19 papers and one abstract (with additional information from the authors) that met the inclusion criteria. The systematic search resulted in 20 publications with adequate data on measurement of KAP with diabetic patients.

2.3. BASIC DEMOGRAPHIC CHARACTERS

The basic demographic characters of the participants in the overall review of the articles were given below in brief **(table.1)**

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Table.1. Basic Demographic characters

Reference	Age	Gender	Population size
Maretha le Rouxa *et. al.* [2]	Random	**Male-**43. **Female-**190.	255
MohammadAlvisZibran *et. al.* [3]	**30–45** – 18. **46–60**- 118. **61–75**- 75. **>76** - 14.	**Male-**110. **Female** 115.	225
Alzahrani Salem *et. al.* [4]	**18-30**- 310. **31-45**- 272. **>45**- 220.	**Male-**367. **Female-** 417.	784
Syed Wajid *et. al.* [19]	**18-20**- 55. **21-25**- 60. **26-30** -1.	Random	116
S.Rajbhandari *et. al.* [15]	**18 to 30**- 8. **31 to 43**- 28. **44 to 56**- 55. **57 to 69** – 21. **70 to 82**- 8.	**Male**	120
H. M. M Herath *et. al.* [5]	**18–34**- 113. **35–64**- 156. **Above or equal to 65**- 8.	**Male** 115 **Female** 162	277
Achenef Asmamaw *et. al.* [6]	**≤24** -105,111. **25-30**- 141,116. **31-40** -87,99,98.	**Male** 260,210. **Female** 148,214.	832
Ibrahim A. Bani [7]	**15 – 39-** 1036,297, 1333. **40 – 49**-188,107, 295. **50 - 59** -148, 67, 215. **60+** -115,65.		
Shooka Mohammadi *et. al.* [8]	Random	**Male** 38 **Female** 61	100
Anju Gautam *et.al.* [9]	**≤40**- 13, 17, 30. **>40** – 60- 64, 74,138. **>60** -39, 37,76	**Male-**116 **Female-** 128	244
Mahtab Niroomand *et. al.* [10]	**60 years**- 47, 48. **>60 years -**59, 46.	**Male-**106. **Female-** 94.	200
Muhammad uthman *et. al.* [16]	**40-50**- 80.	**Male-**85.	250

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	51-60- 150. **61-70**- 20.	**Female**-165.	
Malathy R *et.al.* [14]	**< 39** -14, 8. **40–49**- 31, 16. **50–59** -60, 30. **60–69** -30, 16. **70 +-** 2	**Male**-85. **Female**- 122.	207
Viral N. Shah *et. al.* [11]	**30-39** -9. **40-49** -50. **50-59** -96. **60-69**- 59. **70-79**- 20. **> 80** -4.	52% were male.	238
Dinesh Upadhyay *et. al.* [17]	Random	**Male**-103. **Female**-79.	182
Muhammad Saleh Memon et. al.[13]	**20-30** -72. **31-40** -401. **41-50** -188. **>50** -31.	**Male** -248. **Female** -444.	692

2.4. KNOWLEDGE ATTITUDE AND PRACTICE SCORES

2.4.1. KNOWLEDGE

Most of the participants were relatively knowledgeable regarding questions asked about diabetes medication. Most of the participants correctly indicated that diabetes medication should be taken for life (85.9%), 72.9% knew that diabetes medication cannot cure diabetes, and 78.8% indicated that one should not stop taking diabetes medication when feeling sick. Two hundred (78.4%) participants indicated that poor control of diabetes could result in an increased possibility of complications Less than 60% (54.9%) of the participants correctly indicated that sore feet are common in people with diabetes. Approximately half of the participants (47.1%) correctly indicated that people with diabetes may have poor circulation of blood in their feet, while 20.0% incorrectly indicated that this is not the case, and a third (32.9%) were unsure.[2]. The highest score for knowledge was 30, while the mean score was 23.3 (SD ±3.25), which shows that the overall knowledge was high. [3].The average KAP score (%) of the respondents was 75, 45.78, and 42.60, respectively [4]. The mean (CI) knowledge score of the total sample was 16.5 (0.51). Around 37% of the participants scored 19 or more out of 26 and was categorised as having good level of knowledge. Out of the total score of 26, 23% of participants scored less than 14 (poor knowledge) and 39% scored between14 to 18 points (moderate knowledge)[5]. A total of 408 (49%) participants had good knowledge about diabetes mellitus. The mean (+SD) knowledge score about diabetes mellitus

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of study subjects was 9.86 (+4.28) with a maximum possible score of 25. More than half 501(60.3%) of study subjects know about the definition of diabetes mellitus while 225 (39.1%) had good knowledge about symptoms of DM [6]. Majority of the DM patients in our study (96.0%), 97.3% male and 93.1% females were aware about important of monitoring DM, with no significant difference between males and females [7]. Just 2 of the respondents had good knowledge of diabetes while 9 % of the respondents had poor knowledge and there was not any significant difference in the knowledge of diabetes among genders[8]. knowledge was as follows: 21.3 % had highly insufficient, 22.5 % had insufficient, 23 % had sufficient, 20.9 % had satisfactory and 12.3 % had highly satisfactory knowledge [9]. The level of knowledge was significantly higher in patients with a positive family history in comparison to patients with a negative family history [10]. Despite 8 years of average duration of diabetes, about 46% of patients knew the pathophysiology of diabetes. Fewer (38.23%) still believed that diabetes can be cured [11]. good knowledge level of CBIA-DM group significantly increased from 40 % (n = 30) up to 73.4 % and reached a peak in 80 % with scores improved from 13.1 ± 2.4 up to 15.4 ± 2.0 [12]. Out of 692 respondents 333 (48.12%) were totally unaware about diabetes. The remaining 359 (51.88%) respondents who claimed to have knowledge of diabetes were asked about the symptoms, causes, complications of diabetes and its possible impact on eyes [13].

2.4.2. ATTITUDE

The majority of participants (81.2%) felt that they would be quite a different person if they did not have diabetes, and 63.9% felt that 'Having diabetes over a long period changes the personality'. A large percentage (71.0%) felt that diabetes was the worst thing that had ever happened to them, and 51.0% agreed that 'Being told you have diabetes is like being sentenced to a lifetime of illness'. On the other hand, the majority of participants (71.0%) did not mind being referred to as 'a diabetic' [2]. For the attitude component, the highest score was 28 while the mean was 23.1 (±2.73) which show that the overall attitude was high [3]. The levels of attitude in non-DM participants were described as positive 48% and negative 52% [4]. Majority (88%) had poor attitude towards diabetes. About 73% believed that long term use of medications for diabetes will eventually lead to organ dysfunction. Close to 38% of participants who have heard about metformin believed that long term use of metformin can lead to kidney damage. Around 73% believed that use of alternative medicine such as Thebu leaves (Costus speciosus) was more beneficial than the standard treatments. Around 20% of

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participants thought that long-term use of daily insulin injections was harmful even when it was indicated [5]. Respondents correctly stated that diabetes mellitus is not curable (51.3%), diabetes can affect all parts of body (43.3%), and diabetes is a condition of high level of sugar in the blood (41.2%).Most 649 (78%) of respondents correctly stated that frequent hunger is a symptom of diabetes mellitus, while 399(48%) said frequent thirst is a symptom of diabetes [6]. Attitude toward dietary modification was favorable in 74% of diabetics, but for the exercises were 48%, meanwhile 47 % patients believed that when diabetes is controlled, dietary management is not essential and 68% felt that insulin was the last option for treatment[8]. level of attitude was as follows: 28.3 % had highly insufficient, 15.2 % had insufficient, 21.3 % had sufficient, 22.5 % had satisfactory and 12.8 % had highly satisfactory attitude [9]. Good level in attitude toward diabetes and diabetes management of CBIA-DM group increased from 20 % up to 46.6 % and reached a peak in 50 % with scores significantly improved from 33.5 ± 4.1 up to 34.9 ± 6.2 [12]. Out of 692 respondents, 431 (62.3%) believed that diabetes and its complications can be prevented but 55.9% had either poor or no knowledge of various strategies to do this [13].

2.4.3. PRACTICE

The majority of participants (83.1%) reported that they never forgot to take their medication. Only one-third of participants (31.0%) did physical work or exercise every day, of which 64.6% indicated that the physical work or exercise lasted for more than 30 minutes per day. Approximately a third of participants reported that they never ate refined starch, such as white bread or cake (36.9%), fatty food, such as 'slap chips' (French fries) or 'vetkoek' (a small, unsweetened cake of deep-fried dough) (34.1%) and food with a high salt content, such as Russians or polony, or used stock cubes in food preparation (34.9%) [2]. The highest score for practice was 10 while the mean was 7.1 ($\pm$2.04), which shows that the overall practice was also High [3]. The levels of practice of the study subjects were found to be positive in 52% and negative in 48% cases [4]. The majority (90%) stated that they will seek some form of treatment if they or their family members are found to have DM. However, more than half of study subjects had never checked their blood sugar level and only around 30% had regular screening for DM with annual blood glucose measurements. About 65% take refine sugar liberally and a large majority (80%) didn't involve with regular exercises [5]. level of practice scores was as follows: 29.1 % highly insufficient, 14.8 % had insufficient, 27.9 % had sufficient, 12.3 % and 16.0 % had highly satisfactory practice [9].

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Practicing on diabetes self-care is showed by the number of CBIA-DM participants' adherence to all variables of diabetes self-care [12].

The KAP scores of the participants in the overall review articles were given briefly in the below **(table.2)**

Reference	Mean score		
	KNOWLEDGE	ATTITUDE	PRACTICE
Marethale Rouxa et. al.[2]	8.99	0.64	2.24
MohammedAlvis Zibran et. al. [3]	23.3 (± 3.25)	12 28 23.1 (± 2.73)	2 10 7.1 (± 2.04)
Alzahrani Salem et. al. [4]	75	45.78	42.60
S. Rajbhandari1 et. al. [15]	0.269 -0.003	0.123- 0.182	0.036- 0.693
H. M. M Herath et. al. [5]	87%	(88%)	90%
Achenef Asmamaw et. al. [6]	49%	39.5%	
ShookaMohammadi et. al.[8].	9.5±0.89 13	4.01± 1.38 8	2.7± 1.38 8
Anju Gautam et. al. [9]	81	40	14
MahtabNiroom et. al. [10]	61.41%	50.44%	52.23%
Muhammad uthman et. al. [16]	46%, medium in 39% and high in 63%.	Low 8%, medium 32% and high 60%.	78%, medium in 15% and high in 7%.
Malathy R et. al. [14]	**TEST** 18 9.8 ± 3.68 12.92 ± 3.56 0.0001* **CONTROL** 18 10.35 ± 6.22 10.29 ± 6.33 ns	/4 1.84 ± 0.88 2.76 ± 0.86 0.0001* 4 1.94 ± 1.88 2 ± 1.83 ns	32.80 ±0.40 2.88 ± 0.32 0.06 3 3 ± 0 3 ± 0
Viral N. Shah et. al. [11]	46%	40%	40%
Dinesh Upadhyay et. al. [17]	4.90 - 3.34	2.03 - 0.95	0.84-0.76
Muhammad Saleh Memon1 et. al. [13]	48.12%	62.3%	87.5%

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2.4.4. BMI SCORE OF THE PATIENTS

The BMI score was given in the article as the weight (in kilograms) divided by the square of the height (in meters). Classification of overweight and obesity were as per the recommendations of the National Heart, Lung, and Blood Institute, 1998 [6]. According to this classification, patients with BMI of 18.5–24.9 kg/m2 were considered as normal, 25.0–29.9 kg/m2 was considered overweight, and 30.039.9 kg/m2 was considered obese. It was observed that 54 (39.42%) of the test population were overweight and 31 (22.6%) of them were obese, which indicates the poor level of awareness regarding the benefits of physical activity and exercises in reducing the BMI [14]. Obesity increases the risk DM twice while doing daily exercise decreases the risk twice.[7] .Based on findings with regard to BMI, the majority of both men (70.5%) and women (91.7%) were either overweight or obese [2].

The BMI score of the participants was compared in the three articles which were given below in the **(table.3)**

REFERENCE	BMI
Maretha le Rouxa *et. al.* [2]	**Underweight** < 18.5 2 (0.8). **Normal** 18.5–24.9 32 (12.6). **Overweight** 25–29.955 (21.7). **Obese** ≥ 30 165 (65.0). **Class1 (moderately obese)** 30–34.9 -79 (31.1). **Class 2 (severely obese)** 35–39 -9 44 (17.3). **Class 3 (morbidly obese)** ≥ 40 42 (16.5).
Ibrahim A. Bani [7]	**Characteristics Diabetic Non-Diabetic** OR (95%CI) P Value **General Obesity** **BMI** < 30 - 156 (10.1) 1391 (89.9) 1 0.000 **BMI** > 30- 86 (18.9) 368 (81.1) 2.08 (1.5 - 2.7)
Malathy R *et. al.* [14]	**BMI (kg/m2)** **Normal weight** -(18.5–24.9) 52 (38) 28 (40) **Overweight** -(25.0–29.9) 54 (39.4) 28 (40) **Obese** - (30.0–39.9) 31 (22.6) 14 (20)

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3. CONCLUSION

The above survey provides an idea that there is a diverse characters of the participants which may variously affects the knowledge attitude and practice of the study participants. Poor knowledge, a negative attitude and poor practices related to diabetes were observed in a very high percentage of the participants included in this overall review. The poor KAP observed among the participants was very likely to contribute to the morbidity of these patients. This finding highlights the fact that patients with diabetes from resource-poor settings are often not equipped or equipped to manage their disease condition. The fact that knowledge was associated with attitude indicates that aimed at improving knowledge could benefit patients in more than one way, although no attribution of causality can be inferred from the study**.**

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