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Wishing all our readers a peaceful and prosperous 2017



From the Editor

Chief Editor:

A. Abyad
MD, MPH, AGSF, AFCHSE
Email: aabyad@cyberia.net.lb

Ethics Editor and Publisher

Lesley Pocock
medi+WORLD International
AUSTRALIA

Email:

lesleypocock@mediworld.com.au

Editorial enquiries:

aabyad@cyberia.net.lb

It is fifteen years since we started and we are very pleased with the level and the status of the journal and we promise our readers and authors to keep up the standards in the coming. I wish all our readers, authors and our publisher a happy start of the year.

A cross sectional study was conducted in Qatar looking at the prevalence and determinants of Psychological Morbidity among Arab Diabetic Patients. A two stage random sample was used to first select the PHC centers then select the diabetic patients from each center. The prevalence of Psychological morbidity was measured using an Arabic version of the General Health Questionnaire (GHQ-12) and a data extraction sheet was used to extract the relevant diabetes characteristics. The study showed that the prevalence of psychological morbidity among Arabs diabetic patients was 31.8%. The binary logistic regression found that the most significant predictors of psychological morbidity were female gender (OR=2.5, 95% CI=1.5-4.1), using insulin only to control his disease (OR=3.8, 95% CI=2.1-6.8) and the presence of other comorbidities (OR=2.4, 95% CI=1.1-3.8). Moreover the study reported that 71.6% of Arab diabetic patients showed their willingness to receive psychological therapy whenever there is a need for it. The authors concluded that almost one third of Arab diabetic patients attending primary health care centres in Qatar have psychological morbidity. The most significant predictors were female gender, insulin use, and presence of comorbidities.

A prospective clinical audit was conducted of 120 Yemeni patients (45 males and 75 females), aged 5-54 years from all patients with different skin diseases in dermatology clinic (January 2013 - May 2014), treated by NB-UVB irradiation without being combined with topical steroid or topical chemotherapy during the course of the study.

Ninety four (78.3%) of patients had complete response to treatment, 6.7% had partial and 15% had no response. Mycosis fungoid and atopic dermatitis had high mean number of session (84.50±0.70), followed by vitiligo with mean number of session 27.10±23.70. The Lichen planus, Mycosis and Pityriasis had complete response (100%) to treatment, followed by vitiligo 79.3%, while partial response appear in patients with alopecia (66.7%) and atopic dermatitis (22.2%). Patients with chronic renal failure had no response to treatment in 33.3%, followed by Parapsoriasis (20%). The authors concluded that their our study proves that NB- UVB therapy is an effective and safe tool in the management skin diseases and considered the first-line phototherapeutic option for many skin conditions.

A paper from Iraq looked at the use of PowerPoint presentations in Medical Conferences in Iraq. (A Qualitative Study) A mixed qualitative study, using observational approach. A checklist prepared by investigator, used to predict certain aspects in presentations, presenters approach as well as conferences organization. Eight conferences were included from 4 governorates in Iraq for the period from November 2009 to December 2011. A total of 102 PowerPoint presentations included in the study. The authors concluded that many problems noticed with presentations in medical conferences. Organizers need to give more efforts for logistics, delay in time, presentation duration, and assure quite environment. Presenters should give consideration to their facing, voice, pointer use as well as preparing their PPT slides properly.

A cross sectional study was performed at Family Medicine and internal medicine departments, Armed Forces Hospital of Jizan (AFHJ), Saudi Arabia. To assess pattern and predictors of

glycemic control among type 2 diabetics based on glycosylated hemoglobin (HbA1c) and fasting plasma glucose (FPG). A sample size of 78 type 2 diabetics was calculated and selected randomly from the study population. The Socio-demographic and clinical data were collected using structured questionnaires. Also, FPG, HbA1c, total Cholesterol, Low Density Lipoprotein (LDL), High Density Lipoprotein (HDL), serum Triglycerides (TG) and renal function tests (serum urea and creatinine) were assessed using the appropriate kits. The total number of males was 37 (47.4%) and that of females was 41 (52.6%). Their age ranged from 22-90 with a mean of 54.6±13 years. The mean of HbA1c was 8.79±2.17 gm % and that FPG was 180.64±42.27mg/dL. The authors concluded that poor glycemic control and atherogenic lipid profile are highly prevalent among the study group necessitating aggressive screening and treatment for dyslipidemia, and appropriate management of diabetes.

A paper on what can quality improvement add to diabetes care from Dubai, discusses the concepts of quality and how they should be extended to expand over all medical specialties putting the goal of patients' safety as the first goal in practice. The growing prevalence of diabetes should be grounds for the question; Why are the figures not going down although huge budgets have been directed to decrease these figures? One of the answers is the lack of investment on a quality improvement system integrated with clinical diabetes care.

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Prevalence and Determinants of Psychological Morbidity among Arab Diabetic Patients

Hamad Rashid Al-Madhaki (1)
Mohamed Ghaith Al-Kuwari (2)

(1) Dr Hamad Rashid Al-Madhaki
Consultant in Preventive Medicine, Department of Family & Community Medicine
Primary Health Care Corporation
Doha, Qatar

(2) Dr Mohamed Ghaith Al-Kuwari
Consultant in Preventive Medicine, Aspetar Hospital
Doha, Qatar

Correspondence:

Dr Mohamed Ghaith Al-Kuwari
Consultant in Preventive Medicine
Aspetar Hospital
Doha, Qatar
Email: drmgalkuwari@gmail.com

Abstract

Aim: Studies show that psychological morbidities are common among primary health care attendees, especially diabetic patients, affecting nearly all aspects of diabetes care. The aim of the study was to estimate the prevalence of psychological morbidity among Arab diabetic patients attending primary health care centres in Qatar, as well as identifying the determinants of this psychological morbidity among them.

Methods: A cross sectional study was conducted among Arab diabetic patients attending primary health care centres in Qatar, where a two stage random sample was used to first select the PHC centres then select the diabetic patients from each centre. The prevalence of Psychological morbidity was measured using an Arabic version of the General Health Questionnaire (GHQ-12) and a data extraction sheet was used to extract the relevant diabetes characteristics. Appropriate analysis was applied using the SPSS program.

Results: The study showed that the prevalence of psychological morbidity among Arab diabetic patients was 31.8%. The binary logistic regression found that the most significant predictors of psychological morbidity were female gender (OR=2.5, 95% CI=1.5-4.1), using insulin only to control their disease (OR=3.8, 95% CI=2.1-6.8) and the presence of other comorbidities (OR=2.4, 95% CI=1.1-3.8). Moreover the study reported that 71.6% of Arab diabetic patients showed their willingness to receive psychological therapy whenever there is a need for it.

Conclusion: Almost one third of Arab diabetic patients attending primary health care centres in Qatar have psychological morbidity. The most significant predictors were female gender, insulin use, and presence of comorbidities.

Key words: Diabetes, Arab, Psychological.

Introduction

Mental health is part of overall health, and this is clear in the World Health Organization (WHO) definition of health, which is: "A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".(1) This definition emphasises that mental health is an integral part of health, mental health is more than the absence of mental illness, and mental health is intimately connected with physical health and behaviour.

As mental health cannot be separated from physical health of any individual, studies conducted among individuals with chronic disease revealed that the prevalence of psychological morbidity (PM) is significantly higher in those with chronic disease.(2)

Worldwide estimates of PM among individuals with diabetes appear to vary in different countries, as in the US the prevalence rate of depression was 8.3%(3), 17% in the Netherlands,(4) while in a Greek study it has reached 33.4%. There are fewer studies conducted in the Middle East addressing such an important issue. However a study conducted in Iran had found major depression in 71.8% of diabetic patients,(5) while it is about 33% in Bahrain(6) and the UAE.(7)

The impact of PM on diabetes is an important public health issue because it has been generally associated with poor outcomes from diabetes care and it greatly affects the quality of life of diabetics as significant behavioral demands and challenging psychosocial factors affect nearly all aspects of diabetes care.(8,9) Thus, estimating the prevalence and knowing the determinants of psychological morbidity will help health care providers in reaching those in need of psychological intervention, which could play an important role in relieving the psychological as well as the physical symptoms of diabetes.

Subjects and Methods

This cross-sectional study has been approved by Hamad Medical Research Centre under research No. 10014/10. There are 22 primary health care (PHC) centres in Qatar. Of these centres, 16 centres have diabetic clinics providing specialized diabetic services where a qualified family physician and a senior nurse who have been trained and certified as diabetic educators help in providing health education and document all the diabetes related data in a diabetes follow-up sheet which is supervised and signed by the attending physician; so this study was targeting Arab Diabetic patients attending primary health care diabetic clinics. We have used a two stage random sampling where we have selected 8 health centres out of 16 (4 in Doha, the capital cities and another 4 from other towns). Then 459 Diabetic patients of 18 years of age or older, with type 1 or type 2 diabetes who were Qataris or any other Arab nationals have been recruited through random sampling by selecting three days of the week and selecting all diabetic patients attending the clinics. We have excluded

all women with gestational diabetes, and those without a medical record in the health centre. An informed consent form has been taken from each patient who accepted to be recruited in this study.

The primary outcome was PM which can be defined as depression, anxiety and their related symptoms of social dysfunction and loss of confidence(10), and was measured using the GHQ-12 where a score of 11 and above out of the total 36 score, is considered as a positive case.(11) Personal data were collected using a self-administered questionnaire that included the socio-demographic characteristics, family history of psychiatric illness, smoking status, their willingness to receive psychological therapy and their perception about their glycemic control. Other clinical data were collected using a data extraction sheet from the patients file and that included the diabetes characteristics, presence of complication and presence of comorbidities. The participants were informed about the nature of the study, its purpose and assured that data will be kept anonymous and confidential.

Statistical analysis:

Frequency tables were used to describe qualitative data and mean and standard deviations were used to describe quantitative data while Chi-square test was used to compare proportions between categorical variables.

Logistic regression was used to identify the most significant predictors associated with psychological morbidity among Arab diabetic patients. Dichotomous independent variables and the main outcome were entered into the binary logistic regression model of the Statistical Package for the Social Sciences (SPSS) program and odds ratio (OR) was used to estimate the strength of the relationship between psychological morbidity and the most significant predictors associated with psychological morbidity among Arab diabetic patients using the backward stepwise (Wald) method in the logistic regression analysis.

Subjects and Methods

A total of 459 Arab diabetic patients were approached of which 422 agreed to participate giving us a response rate of 91.9%. Seven of them were excluded from the study due to missing data in their questionnaire, so a total of 415 subjects are included in the analysis of the study. Their socio-demographic characteristics are summarised in Table 1, and their diabetes characteristics are summarised in Table 2.

The prevalence of psychological morbidity among Arab diabetic patients attending primary health care centres in Qatar was 31.8%, where a higher percentage of those in the early adulthood period (< 40 years) have psychological morbidity than those in the middle or late adulthood period (≥ 40 years) (41.6% vs. 29.1%) and this difference is statistically significant ($p < 0.05$) - Table 3.

Table 1: Distribution of socio-demographic characteristics of the study subjects.(n=415)

Socio-demographic characteristics	NO.	%
Age (years)		
< 40 years	89	21.4
≥ 40years	326	78.6
Gender		
Male	257	61.9
Female	158	38.1
Nationality		
Qatari	184	44.3
Non-Qatari	231	55.7
Educational level		
No college degree	279	67.2
College degree & above	136	32.8
Marital status		
Currently Married	323	77.8
Currently Unmarried*	92	22.2
Employment status		
Currently employed	270	65.1
Currently unemployed**	145	34.9

*It includes the single, divorced and the widowed.

** It includes the unemployed, retired, students and housewives.

Table 2: Distribution of diabetes characteristics of the study subjects. (n=415)

Diabetes characteristics	NO.	%
Diabetes type		
Tybe1	71	17.1
Tybe2	344	82.9
Diabetes duration (years)		
≤ 10 years	282	68.0
> 10years	133	32.0
Treatment Regimen:		
Insulin	87	21.0
Oral hypoglycemic	167	40.2
Mixed treatments*	141	34.0
Diet & exercise	20	4.8

* This includes those on insulin and oral hypoglycemics

Concerning gender a lower proportion of males suffer from psychological morbidity as compared to females (25.7% vs. 41.8%) and this difference is statistically significant. When comparing the patients in terms of nationality, the percentage of patients with psychological morbidity is slightly higher among non-Qatari's (33.3%) than Qatari's (29.9%) but this difference did not reach a significant value ($p>0.05$).

Table 3: Psychological morbidity among diabetic patients according to their socio-demographic characteristics. (n=415)

Socio-demographic characteristics	Psychological morbidity among diabetic patients				Significance	
	Without psychological morbidity		With psychological morbidity			
	No.	(%)	No.	(%)		
Patients age						
< 40 years	52	(58.4)	37	(41.6)	$X^2 = 4.982$ $p = 0.026$	df = 1
≥ 40years	231	(70.9)	95	(29.1)		
Gender						
Male	191	(74.3)	66	(25.7)	$X^2 = 11.680$ $p = 0.001$	df = 1
Female	92	(58.2)	66	(41.8)		
Nationality						
Qatari	129	(70.1)	55	(29.9)	$X^2 = 0.559$ $p = 0.454$	df = 1
Non-Qatari	154	(66.7)	77	(33.3)		
Marital status						
Currently married	229	(70.9)	94	(29.1)	$X^2 = 4.915$ $p = 0.027$	df = 1
Currently Unmarried*	54	(58.7)	38	(41.3)		
Educational level						
No college degree	193	(69.2)	86	(30.8)	$X^2 = 0.379$ $p = 0.538$	df = 1
College degree & above	90	(66.2)	46	(33.8)		
Employment status						
Currently employed	188	(69.6)	82	(30.4)	$X^2 = 0.736$ $p = 0.391$	df = 1
Currently unemployed**	95	(65.5)	50	(34.5)		
Monthly income in QRS						
< 5000	102	(68.0)	48	(32.0)	$X^2 = 0.733$ $p = 0.693$	df = 2
5000 to 15000	122	(66.7)	61	(33.3)		
>15000	59	(72.0)	23	(28.0)		

It includes the single, divorced and the widowed.

** It includes the unemployed, retired, students and the housewives.

Concerning the patient's diabetes characteristics there is a significant difference between them in terms of type of diabetes. Higher percentage of patients with type I have psychological morbidity than those with type II (43.7% vs.29.4%), as shown in Table 4. Conformingly a higher proportion of patients who are using insulin only have psychological morbidity than those who are using other regimens (oral hypoglycemic, diet & exercise or mixed treatments) (52.9% vs. 26.2%). This difference is statistically significant.

The percentage of patients with perceived uncontrolled diabetes who have psychological morbidity are higher than those who perceive a good control of their diabetes (35.7% vs. 26.6%). This difference is statistically significant. Furthermore 41.1% of patients with diabetes duration longer than 10 years suffer from psychological morbidity as compared to 27.3% among those with a diabetes duration less than or equal to 10 years. This difference is statistically significant.

Table 4: Psychological morbidity among diabetic patients according to their diabetes characteristics.(n=415)

Diabetes characteristics	Psychological morbidity among diabetic patients				Significance	
	Without psychological morbidity		With psychological morbidity			
	No.	(%)	No.	(%)		
Type of Diabetes						
Type I	40	(56.3)	31	(43.7)	$X^2 = 5.550$ $p = 0.018$	df = 1
Type II	243	(70.6)	101	(29.4)		
Treatment Regimen						
Insulin	41	(47.1)	46	(52.9)	$X^2 = 22.522$ $p = 0.000$	df = 1
Other regimens*	242	(73.8)	86	(26.2)		
Perceived Glycemic control						
Controlled	130	(73.4)	47	(26.6)	$X^2 = 3.927$ $p = 0.048$	df = 1
Uncontrolled	153	(64.3)	85	(35.7)		
Duration of diabetes						
≤ 10 years	205	(72.7)	77	(27.3)	$X^2 = 8.223$ $p = 0.004$	df = 1
> 10 years	78	(58.6)	55	(41.4)		

This includes those on oral hypoglycemic, diet & exercise or mixed treatments.

When comparing the distribution of psychological morbidity among diabetic patients according to the existence of more than one complication in the same individual, higher proportions of patients with two or more complications have psychological morbidity than those with no documented complications (52.4% vs. 29.7%), Table 5. Moreover those who have at least one or more comorbidities, regardless of the type of comorbidity, have a higher percentage of psychological morbidity than those with no existing comorbid disease (34.8% vs. 21.9%). This difference is statistically significant, as demonstrated in Table 6.

Table 5: Psychological morbidity among diabetic patients according to the presence of two complications or more. (n=332)

Presence of two complications or more	Psychological morbidity among diabetic patients				Significance
	Without psychological morbidity		With psychological morbidity		
	No.	(%)	No.	(%)	
Yes	20	(47.6)	22	(52.4)	X ² = 8.633 df = 1 p = 0.003
No	204	(70.3)	86	(29.7)	

Table 6: Psychological morbidity among diabetic patients according to presence of at least one comorbidity or more. (n=415)

Presence of at least one comorbidity or more	Psychological morbidity among diabetic patients				Significance
	Without psychological morbidity		With psychological morbidity		
	No.	(%)	No.	(%)	
Yes	208	(65.2)	111	(34.8)	X ² = 5.680 df = 1 p = 0.017
No	75	(78.1)	21	(21.9)	

There is no statistically significant difference between patients with psychological morbidity according to their willingness to receive psychological therapy, family history of psychiatric illness and smoking status ($p > 0.05$), as illustrated in Table 7.

Table 7: Psychological morbidity among diabetic patients according to their willingness to receive psychological therapy, family history of psychiatric illness and smoking status. (n=415)

Characteristics	Psychological morbidity among diabetic patients				Significance	
	Without psychological morbidity		With psychological morbidity			
	No.	(%)	No.	(%)		
Willingness to receive psychological therapy						
Yes	207	(69.7)	90	(30.3)	$\chi^2 = 1.090$	df = 1
No	76	(64.4)	42	(35.6)		
Family history of psychiatric illness.						
Yes	11	(50.0)	11	(50.0)	$\chi^2 = 3.545$	df = 1
No	272	(69.2)	121	(30.8)		
Smoking status						
Currently smoking	47	(59.5)	32	(40.5)		
Currently not smoking*	236	(70.2)	100	(29.8)		

*This includes the ex-smoker and those who never smoked

Table 8: The most significant predictors associated with psychological morbidity among Arab diabetic patients using the binary logistic regression analysis

Variable	Psychological morbidity		
	OR	95% CI	P-Value
Gender			
Male	1	-	-
Female	2.5	1.5-4.1	0.000
Treatment regimens			
Other regimens	1	-	-
Using insulin only	3.8	2.1-6.8	0.000
Presence of comorbidity			
No	1	-	-
Yes	2.1	1.1-3.8	0.012

Predictors of Psychological Morbidity among Arab Diabetic Patients

The determinants that have been found to be significantly associated with psychological morbidity using the Pearson's chi-square test are re-analyzed again using the multivariate binary logistic regression to adjust for the confounding effect between independent variables (determinants of psychological morbidity) and the dependent variable (psychological morbidity). Results were presented in Table 8.

Regarding gender; being a female nearly doubles the chance of having psychological morbidity as they are 2.5 times more likely to have psychological morbidity than males (OR=2.5, 95% CI=1.5-4.1), on the other hand patients using insulin only are 3.8 times more likely to have psychological morbidity than those using other regimens (OR=3.8, 95% CI=2.1-6.8). Similarly those patients who had coexisting morbidities are about two times more likely to have psychological morbidity (OR=2.4, 95% CI=1.1-3.8) than those who did not.

Discussion

This cross sectional study explored the prevalence of psychological morbidity among Arab diabetic patients attending primary health care centres in Qatar in order to draw the attention to the health care provided to patients with a highly prevalent disease in the country which is diabetes as an effort to improve the quality of care provided to them and help in reducing the burden of this prevalent disease. This study used a simple, inexpensive, screening instrument, which has been used in different studies with similar primary health care settings.

The response rate in this study was 91.9% which is relatively high especially when we are addressing psychological morbidity that might be considered as a stigma in the Arab world. However, the entire participants were given a full explanation of the nature of the study and assurance that all the data will be kept anonymous. Moreover the questionnaire was distributed by the same individuals providing the service i.e. the diabetic educators, making it more acceptable to the participants.

This study found that almost one third of the Arab diabetic patients in Qatar had psychological morbidity (31.8%) and this comes in agreement with many international studies conducted among diabetic patients as in the Australian study, which found that the prevalence of depression was 30% while anxiety was 35%(12) and similar finding were reported in a Greek(13) study and in a Bangladesh study(14).

On the other hand some other studies reported a much lower prevalence as two American studies(3, 15) reported a prevalence of 10.1% for anxiety and 8% for depression, but in both of these studies a telephone survey approach was used and this might explain the

lower prevalence of psychological morbidities reported in both of these studies as it might have excluded people who do not have land-line phones in their household, the homeless, and institutionalized populations, i.e. the low social class people who might have a higher prevalence of psychological morbidity. Beside that people having psychological morbidity might be reluctant to answer the call and participate in such a survey. Other studies found a much higher prevalence, like the Iranian study which reported a prevalence of depression to reach as high as 71.8%, but this study was conducted in a hospital setting which might be different from the setting used in the present study in terms of the severity of diabetes and presence of more severe complications and or other comorbidities(5).

Although studies conducted in the GCC region reported a more or less similar rates as the present study, like the study conducted in Bahrain(6) and the UAE(7), another study conducted in Bahrain found a higher prevalence(16) than the present study and this again might be explained by the fact that, the investigator used a mixture of primary, secondary as well as tertiary level care as a setting for their study, as this population might include cases with more debilitating complications.

In general the variation in the prevalence of PM among diabetic patients might partly be explained by the use of multiple tools to assess psychological morbidities such as the GHQ, PHQ, BDI and the HADS as well as whether or not the tool used has been validated to be used among diabetic patients or not. Among other factors that might contribute to this variations are the geographical location (urban vs. rural), ethnicity of the subjects and the setting of the study (primary care, community based, or hospital based).

Gender was among the most significant predictors of PM in this study as it has been found that females were more likely to have PM than males and this comes in agreement with many studies(13) and the fact that women are more susceptible to PM especially depression may be explained by the theory that the biological and physical make up of women automatically puts them more at risk of developing psychological morbidity(17) as from puberty onwards, fluctuating hormone levels affects their body both physically and emotionally. Similarly, during and after pregnancy women may be particularly vulnerable to depressive disorders such as postpartum depression and postpartum psychosis. In addition to biological factors, they also tend to be more affected by the environment around them, and strive for perfection both physically and otherwise. This predefined social role, both increases the pressure, which they place on themselves.

This study as well as many other studies reported that insulin use increases the likelihood of developing psychological morbidity(18,19); this might be explained by the fact that these patients have injection related anxiety especially when the insulin is self injected,(20) as insulin self-management can be burdensome, especially when patients must deal with their diabetes all day

and every day, by self-monitoring of the blood glucose, taking insulin and making sometimes complex decisions about insulin dosage in relation to physical activity and diet. Other factors, such as worries about hypoglycemia, gaining weight, the impact of insulin therapy on the social environment and feeling of failure as insulin therapy signifies that one has failed to manage diabetes with diet/tablets(21). Many physicians also threaten their patients with insulin as a final solution for controlling diabetes, creating a great feeling of anxiety once insulin is initiated. Patients also want to avoid injections because they see insulin injections as a social stigma that labels them as diabetic. In addition those who are using insulin only to control their diabetes, as in the present study, are prone to more daily insulin injection, as well as since their failure is intensified as they think that no other treatment could possibly be effective with their diabetes and their one and only chance is insulin to have a better control.

It is well known that most diabetes patients have a number of comorbidities(22) such as hypertension, hyperlipidemia and the present study showed that there is a significant relationship between the presence of comorbidity and PM by both univariate and multivariate analysis. This finding agrees with studies that explore this relationship such as Ali et al.(23,24). However, when comparing each comorbid disease separately such as hypertension and hyperlipidemia, the study analysis failed to find a significant difference, and this might be attributed to the fact that the study addressed very prevalent comorbidities in Qatar as most patients have them whether they have psychological morbidity or not and maybe the study did not have enough power in some of these comorbidities to detect a significant difference such as in asthma.

The relationship between psychological morbidity and age must be interpreted with caution as some studies showed that psychological morbidity has been shown to be common among younger people (25,26). This might be explained by many factors as older people have fewer economic hardships and fewer experiences of negative interpersonal exchanges, beside younger adults may be more reactive to life stressors, and they may cope less effectively with these conditions than older adults(26). On the other hand different studies showed contradicting results,(27) with depression being more common among older people although older patients are less likely to report depressive symptoms and they might have suboptimal cognitive functions, which makes it difficult to diagnose psychological morbidity among them(28).

Diabetes duration has been addressed in many studies as a determinant of psychological morbidity, where some studies found that those with longer duration of diabetes are more likely to have PM than those with a shorter duration(13,29). This might be attributed to the fact that living longer with such a demanding disease exposes the individual to a longer duration of stress that might exhaust his coping resources. Also it should be noted that studies reported that after ten years, the likelihood of developing diabetes complications increases in both types of diabetes as reported by Ammari (30) and Basit et al(31).

In addition this study did not show a significant relationship between currently smoking and psychological morbidity and this is in agreement with Nasser et al(6) while there are other studies that found a significant relationship between smoking and psychological morbidity(32). This finding should be interpreted with caution, as smoking is not defined in the same way in many of the studies addressing smoking.

Nevertheless, it should be worth noting that the majority of patients reported their willingness to receive psychological therapy when needed (71.6%). This should encourage the decision makers in the country to consider incorporating preventive psychological interventions into primary care services directed towards diabetic patients to enhance adaptation to diabetes and reduce related stress.

Strengths and limitations:

As in any mental health screening using a questionnaire, one cannot rule out the social desirability bias or mental health bias; also the clinical characteristics in the study are based on the existing data in the patient's file, as the PHC department are still in the process of developing guidelines which will help in standardizing the services provided in all PHC centers in Qatar. However, this study has its strength, as although it is targeting a sensitive issue in the Arab world it manages to achieve a high response rate (91.9%), and the investigator used a simple inexpensive validated tool, which can be used for future screening of diabetic patients for psychological morbidity. In addition this study can act as a baseline for the planning of preventive mental health services for diabetics in Qatar.

Conclusions

Almost one third of Arab diabetic patients attending primary health care centres in Qatar have psychological morbidity where female gender, insulin use and presence of multiple comorbidities are the most significant predictors of psychological morbidity among them.

More studies need to be done in this field in order to identify the risk factors for psychological morbidity among people with chronic disease especially diabetes, and to improve the mental health services that are offered to these people as in this study about two thirds of Arab diabetic patients showed their interest in receiving psychological therapy if they need it.

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Pattern and predictors of glycemic control among type 2 diabetics in Armed Forces Hospital of Jizan, southwestern Saudi Arabia

Hassan A. Abdelwahid (1)

Saud M. Erwi (2)

Firas S. Alahmari (2)

Amani A.K. Ibrahim (3)

Hesham M. Dahlan (1)

(1) Consultant family medicine, Armed Forces Hospital of Jizan (AFHJ)

(2) Consultant internal medicine, AFHJ;

(3) Senior registrar family medicine, AFHJ.

Correspondence:

Dr. Hassan Ali Abdelwahid, Consultant of Family Medicine,
Armed Forces Hospital of Jizan,

PO 45911, Jizan,

Kingdom of Saudi Arabia;

and Professor of Family Medicine,

Suez Canal University.

Tel. +966 543075421; 0021093159111

Email: hassan22220000@yahoo.com

Abstract

Objectives: To assess pattern and predictors of glycemic control among type 2 diabetics based on glycosylated hemoglobin (HbA1c) and fasting plasma glucose (FPG).

Methods: This cross sectional study was performed at Family Medicine and internal medicine departments, Armed Forces Hospital of Jizan (AFHJ), Saudi Arabia. The field work was conducted during the period of July 2016 to August 2016. A sample size of 78 type 2 diabetics was calculated and selected randomly from the study population. The Socio-demographic and clinical data were collected using structured questionnaires. Also, FPG, HbA1c, total Cholesterol, Low Density Lipoprotein (LDL), High Density Lipoprotein (HDL), serum Triglycerides (TG) and renal function tests (serum urea and creatinine) were assessed using the appropriate kits.

Results: The total number of males was 37 (47.4%) and that of females was 41 (52.6%). Their age ranged from 22-90 with a mean of 54.6 ± 13 years. The mean of HbA1c was 8.79 ± 2.17 gm % and that FPG was 180.64 ± 42.27 mg/dL. More than two thirds of the patients in the present study were poorly controlled. HbA1c target, <7 gm%, was detected only in 24.4 % (19/78). FPG, HDL and duration of diabetes were the only significant independent predictors of HbA1c in the present study.

Conclusion: Poor glycemic control and atherogenic lipid profile are highly prevalent among the study group necessitating aggressive screening and treatment for dyslipidemia, and appropriate management of diabetes.

Key words: Type 2 Diabetes mellitus, Glycemic control, Predictors, Glycosylated hemoglobin, Low-density lipoprotein, High-density lipoprotein, Triglycerides

Introduction

Diabetes mellitus, DM, is a chronic debilitating disease that has a serious complication if uncontrolled. Globally, its prevalence estimates indicate that it is approaching epidemic proportions.(1) It was considered a disease of minor significance to world health, now it is considered as one the main threats to human health in the 21st century.(2)

Worldwide, in 2014, it was estimated that almost 422 million people suffer from diabetes with a prevalence of 8.5%. (3) The burden of the disease is expected to increase to 642 million by 2040. Diabetes caused 5 million deaths in 2015 and it is estimated that every six seconds a person dies from diabetes. (1) The Kingdom of Saudi Arabia is not an exception because the prevalence of DM has been increased from 2.5% in 1982 to 23.7%(4) in 2004 due to the westernization of life habits and increased urbanization. (5) The long term microvascular and macrovascular complications are also highly prevalent among Saudi diabetics. (6)

Glycemic control is one of the primary goals of diabetes management because it is well established that improved glycemic control delays the onset and retards the progression of microvascular and macrovascular complications. (7) Glycemic control in type 2 diabetes (DM2) patients can be assessed by three parameters: glycosylated hemoglobin (HbA1c), fasting plasma glucose (FPG) and postprandial glucose (PPG). However HbA1c is the gold standard for assessing glycemic control. Acute glucose fluctuations could also be involved in the pathogenesis of chronic complications in type 2 diabetes and the treatment decisions should not be based only on HbA1c, but should also take into account glycemic variability. (8) The cutoff point of HbA1c for satisfactory diabetic control is 7% for the American Diabetes Association (ADA) and 6.5% for the American College of Endocrinologists. Regarding fasting blood glucose, recommended goals are within a range of 70-130 mg/dl (3.9-7.2 mmol/l) for the American Diabetes Association and at <110 mg/dl (6.1 mmol/l) and 100 mg/dl (5.5 mmol/l) for the American College of Endocrinologists and the International Diabetes Federation. The postprandial glucose threshold values are <180 mg/dl (American Diabetes Association) and <140 for American College of Endocrinologists and the International Diabetes Federation. Because of these large discrepancies that are observed in the guidelines regarding the thresholds of glycemic control, the ADA recommendations will be used in the present study. (9)

Despite available health services, glycemic control is poor in the kingdom. The results of an interesting study that was conducted on all patients attending the diabetic clinic of King Khalid National Guard Hospital in Jeddah showed that glycemic control was good in, only, 8.1% (HbA1C<7%), fair in 23.2% (HbA1C 7.1-8%), poor in 26.6% (HbA1C 8.1-9%) and very poor in 41.9% (HbA1C >9%).(10) In order to improve the provided care of type 2 diabetics, in Armed Forces Hospital of Jizan (AFHJ), there is an urgent need to

study the pattern and predictors of glycemic control based on scientific research outcomes because there are no previous studies dealing with that topic in AFHJ.

Methods

This cross sectional study was performed at Family Medicine (FM) and internal medicine (IM) departments, Armed Forces Hospital of Jizan (AFHJ), Jizan, Saudi Arabia. Jizan is the capital city of Jizan region that lies in the southwest corner of Saudi Arabia on the Red Sea coast, just north of Yemen and has a large agricultural community. The AFHJ is a 36-bed secondary hospital that provides health care for military personnel and their families (approximately 50,000). The target population included all patients eligible for medical care in AFHJ and the study population consisted of type 2 diabetics attending FM and IM outpatient clinics that are affiliated to AFHJ.

A sample size of 78 was calculated (11) from the study population with an estimated prevalence of diabetes to be 25% (from a previous study)(12), 95% confidence coefficient, 10% confidence interval, and 5% non-response rate. Systematic random sampling method was used in which every 3rd patient, according to their order of attendance at the reception desk, presenting to the FM and IM clinics for care, was included in the study.

The inclusion criteria were:

- 1) Type 2 diabetics,
- 2) age \geq 18 years;
- 3) eligibility for medical care in AFHJ; and
- 4) Informed consent to participate in the study.

The exclusion criteria included:

- 1) Patients with type 1 diabetes mellitus;
- 2) those for whom the study procedures would not be feasible due to severe dementia, history suggestive of mental retardation, or unstable medical condition; and
- 3) female patients with gestational diabetes.

The field work was conducted, after we obtained the ethical approval from the hospital Research and Ethics committee, from July 2016 to end of August 2016 and the study was completed in October 2016. The operational design of the present study included the following steps:

- 1) Verbal and written consent was obtained from the participants by trained Saudi nurses for better communications;
- 2) the Socio-demographic data were, also, collected by trained Saudi nurses using pre-designed structured questionnaire that was constructed by the researchers to collect data about patients' characteristics e.g. age, gender, nationality, marital status, number of children if any, housing, income, occupation, education level and family size. The socio-demographic data and patients' consent were collected before the doctor consultation.;
- 3) Important clinical data were collected during the doctor consultation by the researchers, using a predesigned structured questionnaire, e.g. duration of DM, type of

medication, family history, the presence of diabetic complications, height, weight, BMI, blood pressure, etc.; and

4) Venous blood samples were collected from all the participants after at least 8 hours of overnight fasting. Fasting plasma glucose (FPG), glycosylated hemoglobin (HbA1c), total Cholesterol (TC), Low Density Lipoprotein (LDL), High Density Lipoprotein (HDL), serum Triglycerides (TG) and renal function tests (serum urea and creatinine) were assessed using the appropriate kits in the hospital laboratory.

The following ethical points were taken into consideration based on Helsinki Declaration (13):

- 1) Confidentiality: the information was treated in confidence and the names of the patients could not be identified.
- 2) The activities of the research did not lead the patients and physicians to commit acts, which diminish their self-respect.
- 3) Approval of research and ethics committee to conduct the study.
- 4) Written consent of the participant was taken.
- 5) Appropriate management of patients based on the results of the comprehensive history taking, physical examination and Lab work-up.

The Statistical Package for Social Sciences (SPSS version 16.0) was used for data analysis. Descriptive statistics and appropriate significance tests were used according to types of variables. Glycosylated hemoglobin and fasting plasma glucose were compared between different categories of important baseline socioeconomic and clinical variables, using the group t-test. Pearson's bivariate correlation analysis was used to assess linear associations between HbA1c and other continuous variables. One way analysis of variance (ANOVA) was conducted to test the significance of differences in HbA1c and FPG levels in different categories of medical treatment and body mass index (BMI). Multiple linear regression analysis was computed to identify the predictors of glycemic control (HbA1c). The $p < 0.05$ was considered the significance cut-off point.

Results

The study included 78 Saudi type 2 diabetics. The total number of males was 37 (47.4%) and that of females was 41 (52.6%). Their age ranged from 22-90 with a mean of 54.6 ± 13 (Table 1). The age of males (57.9 ± 15.9) was significantly higher (t-value, 2.1 and P, 0.037) than that of females (51.7 ± 8.9), (not illustrated in Table 1). Their BMI ranged from 21-46 with a mean of 31.6 ± 6.14 kg/m². The mean of HbA1c was 8.79 ± 2.17 gm % and that FPG was 180.64 ± 42.27 mg/dL. The other biochemical findings are illustrated in Table 1.

Table 2 illustrates that the majority of the participants were married (88.5 %), living in rural areas (83.3%) and had nuclear families (75.6%). Positive family history of diabetes (56.4%) and present history of hypertension (64.1%) were, also, highly prevalent among the study group. Most of the patients were illiterate (n=46, 59.0

%) and not working (Housewife or retired Male, n=59, 75.6%). Glycosylated hemoglobin and fasting plasma glucose were compared between different categories of important baseline socioeconomic and clinical variables, using the group t-test. The results showed that there were no significant differences between different categories of all variables that are listed in Table 2. Pearson's bivariate correlation analysis was used to study the significance of linear associations between HbA1c and other continuous variables (results are not presented in Table 2). The results showed that HbA1c was significantly correlated with diabetes duration ($r=0.338$, $P=0.002$), FPG ($r=0.704$, $P=0.000$), total cholesterol ($r=0.311$, $P=0.006$), Low Density Lipoprotein ($r=0.354$, $P=0.001$), and High Density Lipoprotein ($r= -0.278$, $P=0.014$). On the other hand there were no significant linear associations between HbA1c and other continuous variables like age of patients, serum triglycerides, serum urea, serum creatinine, BMI, and blood pressure (systolic and diastolic blood pressure).

The type 2 diabetics, n=78, were classified according to types of medical treatment into 3 subgroups: group 1 received insulin secretagogues or sensitizer, n= 24 (30.8%); group 2 received insulin secretagogues and sensitizer, n= 34 patient (43.6%); and group 3 was managed by Insulin \pm oral hypoglycemic, n= 20 (25.6%). There were no significant differences between different categories of medical treatment by one way ANOVA. Also there is insignificant difference between different BMI categories regarding HbA1c and FPG as illustrated in Table 3.

The following independent variables were subjected to the multiple linear regression analysis with HbA1c as a dependent variable and FPG, TC, LDL, HDL and duration of diabetes as independent variables. Table 4 illustrates that FPG, HDL and duration of diabetes were the only significant independent predictors of HbA1c in the present study.

The standard targets of HbA1c, FPG were detected in 24.4 % (19/78), and 28.2% (22/78) respectively. Also, the target of total cholesterol, LDL, HDL and TG were observed in 66.7% (52/78), 46.2% (36/78), 50 % (39/78) and 71.8% (56/78), respectively, as illustrated in Figure 1.

Table 1: Baseline characteristics of the study group (n, 78)

	Minimum	Maximum	Mean	SD [▼]
Age in years	22.00	90.00	54.64	13.05
Duration of diabetes (years)	0.16	30.00	7.48	7.08
Systolic blood pressure	100.00	175.00	131.27	14.59
Diastolic blood pressure	60.00	104.00	76.52	10.12
Body Mass index (kg/m ²)	21.00	46.00	31.60	6.14
HbA1c (gm%) [*]	5.10	14.00	8.79	2.17
FPG (mg/dL) ^{**}	80.00	324.00	179.42	59.77
Total cholesterol (mg/dL)	108.66	271.08	180.64	42.27
LDL (mg/dL) ⁺	41.38	247.49	111.95	40.84
HDL(mg/dL) ⁺⁺	13.92	77.00	46.18	12.69
Serum triglycerides (mg/dL)	48.80	380.85	140.19	69.84
Serum Urea (mg/dL)	7.83	78.31	28.2453	12.41
Serum Creatinine (mg/dL)	0.33	2.00	0.88	0.38

[▼], SD, Standard deviation; ^{*}, HbA1c, Glycosylated hemoglobin; ^{**}, FPG, Fasting plasma glucose; ⁺, LDL, Low Density Lipoprotein; and ⁺⁺, HDL, High Density Lipoprotein;.

Table 2: Glycosylated hemoglobin and fasting blood glucose levels in the different categories of socioeconomic and clinical variables

	N (%)	Glycosylated hemoglobin (gm%) [▼]		Fasting plasma glucose (mg/dL) [▼]	
		Mean	SD	Mean	SD
Sex: Male	37 (47.4)	8.80	2.37	176.23	61.21
Female	41 (52.6)	8.78	1.99	182.29	59.04
Marital status:					
Married	69 (88.5)	8.84	2.24	182.67	60.28
Unmarried*	9 (11.5)	8.39	1.58	154.49	52.02
House type:					
Owned	63(80.8)	8.83	2.27	177.55	62.19
Rented	15 (19.2)	8.59	1.72	187.25	49.33
Family type:					
Nuclear	59 (75.6)	8.86	2.23	184.23	7.89
Extended	19 (24.4)	8.53	2.00	164.47	12.86
Source of health care:					
Governmental	67 (85.9)	8.86	2.22	182.35	7.62
Others ⁺	11 (14.1)	8.30	1.88	161.52	11.34
Family history of diabetes:					
Positive	44 (56.4)	8.61	1.94	178.84	8.26
Negative	34 (43.6)	9.02	2.43	180.15	11.40
Smoking history:					
Smoker	9 (11.5)	9.43	2.09	183.81	17.37
Negative [▲]	69 (88.5)	8.70	2.17958	178.84	7.34
History of Hypertension:					
Hypertensive	50 (64.1)	8.65	1.98	175.61	57.21
Normotensive	28 (35.9)	9.03	2.49	186.21	64.59
Residency:					
Rural	65 (83.3)	8.82	2.28	179.64	62.23
Urban	13 (16.7)	8.63	1.54	178.30	47.52

[▼], the P value of the independent t test > 0.05; ^{*}, unmarried (2 diabetics were single and 7 were widows); ⁺, Governmental health centers, private and traditional healer/self-care; [▲], includes 48 nonsmokers (61.5%) and 21 Ex-smoker (26.9%)

Table 3: One way analysis of variance: the significance of differences in glycosylated hemoglobin and fasting blood glucose levels according to type medical treatment and BMI Category

	Glycosylated hemoglobin (gm%) [▼]		Fasting plasma glucose (mg/dL) [▼]	
	Mean	SD	Mean	SD
Type medical treatment:				
Insulin secretagogues or sensitizer ¹	8.3	2.0	164.1	55.3
Insulin secretagogues and sensitizer ²	8.9	2.1	176.2	54.8
Combination (oral and Insulin) ³	9.0	2.4	203.2	68.2
BMI** Category:				
Normal weight (BMI <25 kg/m ² , n=11)	9.8	2.5	199.9	79.7
Overweight (BMI, 25-30 kg/m ² n=22)	8.8	2.5	171.7	57.0
Obese (BMI >30 kg/m ² n=45)	8.6	1.9	178.2	55.8

[▼], P of F ratio, >0.05; ¹, n= 24 patient (30.8%); ², n=34 patient (43.6%); ³, n=20 patient (25.6%); and **, BMI, Body Mass Index

Table 4: Predictors of glycosylated hemoglobin level among the study group

	Unstandardized Coefficients		Standardized B Coefficients	t value	P
	B	Std. Error			
Constant	5.433	1.017	-	5.342	0.000
Fasting blood glucose	0.021	0.003	0.568	5.960	0.000
Total Cholesterol	-0.003	0.008	-0.062	-0.377	0.708
Low Density Lipoprotein	0.011	0.008	0.198	1.262	0.211
High Density Lipoprotein	-0.030	0.014	-0.177	-2.125	0.037
Duration of Diabetes	0.060	0.025	0.197	2.408	0.019

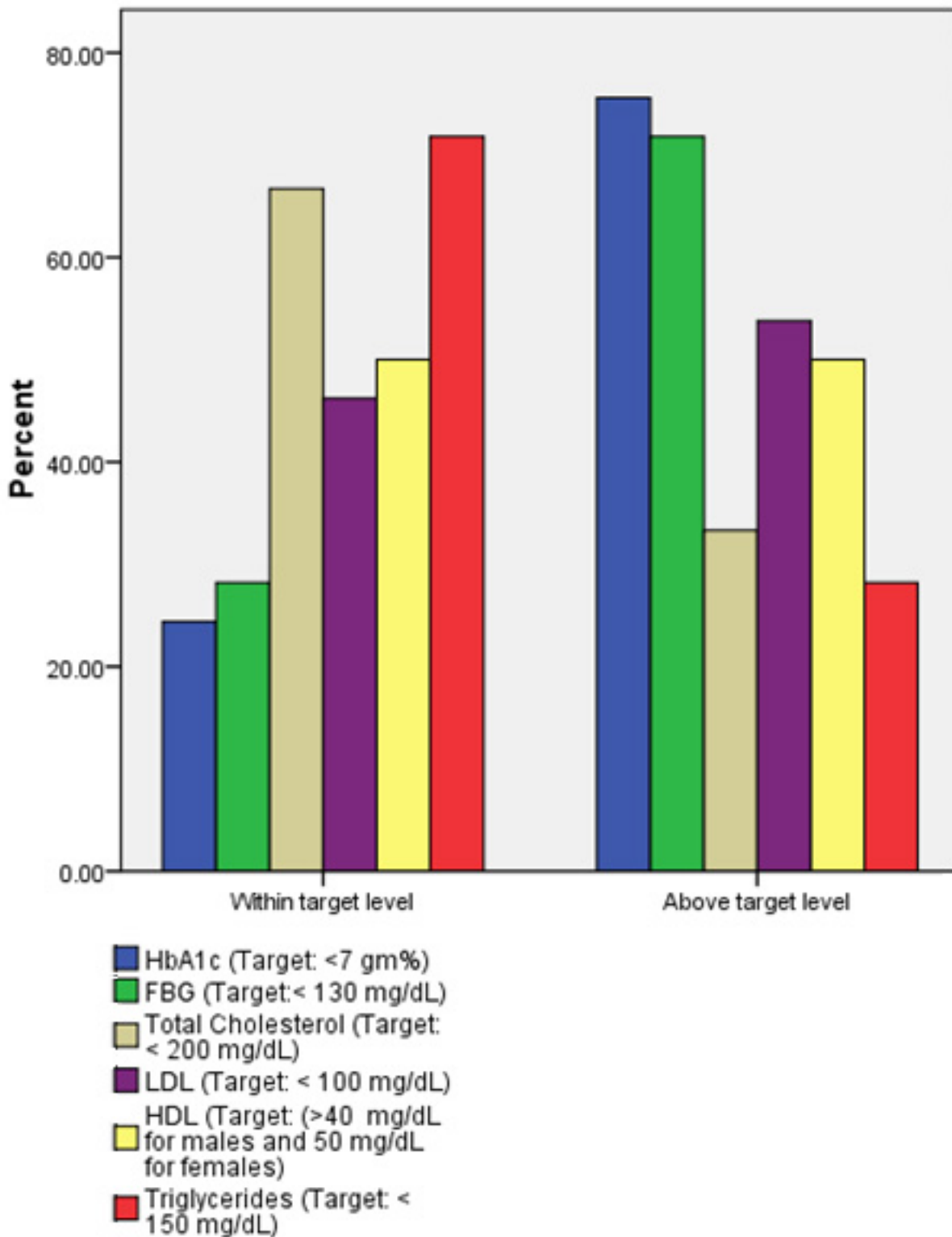
Discussion

More than two thirds of the patients in the present study were poorly controlled with a mean of glycosylated hemoglobin of 8.79±2.17 gm %. The cutoff point for standard target of HbA1c in type 2 diabetics, < 7 gm%, was detected only in 24.4 % (19/78), a result that is consistent with a nationwide cross sectional study, in which data was collected from 28 health centers all over Kingdom of Saudi Arabia with HbA1c mean of 8.20±1.89 gm% and only 27% had reached the target HbA1c of <7 gm%.(14) In Saudi Arabia, the prevalence of poor glycemic control (A1C > 7%) among type 2 diabetics is high in the literature. For example, it was 67.7%(15) in type 2 diabetics attending the Primary Care Clinic of King Khalid University Hospital, in 2012; 67.9% in Al Hasa area of KSA(16); 76.4% in Al-Madinah(17), and 79.4% in patients attending a primary care center in Riyadh(18). So we can conclude that despite available health services, the glycemic control is poor in the kingdom. The low prevalence of good glycemic control in the present study, 24%, is consistent with the reported figures from other Gulf countries and some neighbouring Arabic countries where good glycemic control ranges from 11% to 41%.(19-24) Also, 25% of European outpatients with Type 2DM had adequate glycemic control (HbA1c

< 6.5%).(25) However in Canada, the glycemic control is much better where 50% of type 2 diabetes patients had HbA1c < 7.0%.(26) In the USA, the mean HbA1c nationally was 7.2% in 2007-2010 according to the National Health and Nutrition Examination Survey. However, 33-49% of patients still do not meet targets for glycemic, blood pressure, or cholesterol control. (27)

Obesity and overweight are important risk factors for type 2 diabetes and its glycemic control through increasing insulin resistance.(28) Unfortunately, both risk factors are highly prevalent, among type 2 diabetics in general and the participants of the present study specifically. The BMI of the study group ranged from 21-46 with a mean of 31.6±6.14 kg/m² and prevalence rates of 28% (22/78) and 58% (45/78) for overweight and obesity respectively. Despite insignificant linear association between HbA1c and BMI, the clinical significance of overweight and obesity as risk factors for poor glycemic control cannot be excluded because of the small number of patients with normal body weight among the study group and a further study with larger sample size based on prevalence of normal weight, overweight and obesity is recommended. The same explanation can be applied to the results of bivariate analysis, where there were no significant

Figure 1: Frequency distribution of type 2 diabetes based on standard targets of glycemic control and lipoproteins (n=78)



differences between different categories of all clinical and socioeconomic variables that are listed in Table 2, like marital status, smoking and hypertension.

The bivariate analysis of the present study indicates that fasting blood glucose, total cholesterol, LDL, HDL and duration of diabetes are associated with glycemic control. However the regression model illustrates that FPG, HDL and duration of diabetes were the only significant independent predictors of HbA1c. The finding that the duration of diabetes was associated with poor control study is consistent with other studies and may be explained by deterioration of beta cell function over time. (7, 29, 30)

The significant linear associations between HbA1c and cholesterol, TG, HDL and LDL in diabetic patients, are in agreement with the findings of several other investigators who reported significant correlations between HbA1c and lipid profiles and suggested the importance of good management of diabetes in controlling dyslipidaemia (31). The stronger association of HbA1c with FBG is supported by an earlier study reporting higher correlation coefficients for HbA1c and FPG. (32) HbA1c is a measure of the degree hemoglobin glycosylation in red blood cells and is expressed as a percentage of total hemoglobin concentration.(33) It reflects the mean glycemic values in the previous 2-3 months and is an indicator for overall glucose exposure reflecting both fasting and postprandial hyperglycemia. (34-35) A number of studies have reported significant correlation between HbA1c levels and FPG and PPG level. (36) However, a clear understanding of the relationship between different plasma glucose measurements and HbA1c is necessary for achieving specific HbA1c targets.(37)

The positive linear association of HbA1c with LDL and TG; and its negative linear association with HDL can be explained by the fact that type 2 diabetes is associated with a cluster of lipid abnormalities, including reduced HDL cholesterol and elevated LDL particles and triglycerides (38), atherogenic lipid profile. These changes are also a feature of the insulin resistance syndrome which is prevalent in type 2 diabetes. Also, it was reported that efforts to reduce cardiovascular risks resulted in the improvement of HbA1c even in the absence of any specific intervention targeted at improving glycemic control (32) indicating the clinical significance of complex interactions involved in carbohydrate and lipid metabolism. The atherogenic lipid profile of the present study is consistent with other studies that were conducted in the southern region (39) of Saudi Arabia and at the national level of the Kingdom.(40)

The linear associations of HbA1c in the present study with LDL, TG and HDL are in agreement with the findings of other investigators who reported significant correlations between HbA1c and lipid profiles and recommended aggressive screening and treatment for dyslipidemia, with appropriate management of diabetes, as it is associated with increased risk of cardiovascular disease. (32, 33, 38)

The study has some limitations. Although the study sample was appropriately calculated based on sound sample size equation, it was not large enough to compute subgroup analysis. Further studies should be conducted in the future with larger sample sizes to allow for subgroup analysis. The study group, also, was derived from one practice in a specific region.

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What can quality improvement add to diabetes care?

Almoutaz Alkhier Ahmed

Correspondence:

Dr. Almoutaz Alkhier Ahmed
 Diabetologist , Senior Family Medicine Specialist
 MSc in Diabetes , MRCP[INT] , FESC, FAcadMEs
 Dubai Health Authority - Nad Alhammar Health Center
 Dubai - UAE
 Cardiff University - Wales/UK - Honorary Lecturer
Email: khier2@yahoo.com

Abstract

The concepts of quality should be extended to expand over all medical specialties putting the goal of patients' safety as the first goal in practice.

The growing prevalence of diabetes should be grounds for the question; Why are the figures not going down although huge budgets have been directed to decrease these figures?

One of the answers is the lack of investment on a quality improvement system integrated with clinical diabetes care.

In my review, I will discuss how the integration between quality improvement and clinical diabetes care could improve the outcome of diabetes care.

Key words: Diabetes, Quality improvement, Primary care

Why has diabetes mellitus prevalence increased worldwide?

Although, there were huge efforts to control the spread of diabetes, incidence is going up?

What have we missed in our current view on providing diabetes care?

What do we need to know more about?

Whywhatwhere When ????????????

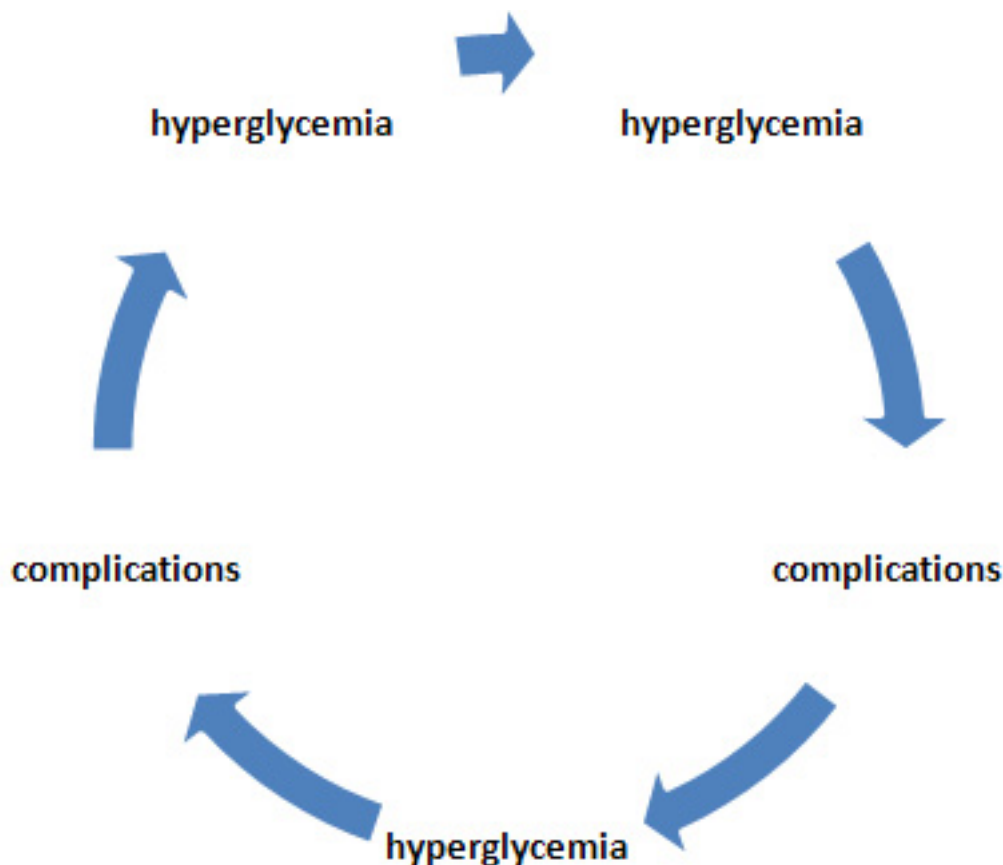
All these questions and more came to our mind when we read the current situation of diabetes care.

Introduction

Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of various organs, especially the eyes, kidneys, nerves, heart, and blood vessels (1).

Therefore, diabetes mellitus is a dynamic disorder running a vicious circle between hyperglycemia and complications (Figure 1).

Figure 1: Dynamic state of diabetes



Long-term complications of diabetes include retinopathy with potential loss of vision; nephropathy leading to renal failure; peripheral neuropathy with risk of foot ulcers, amputations, and Charcot joints; and autonomic neuropathy causing gastrointestinal, genitourinary, and cardiovascular symptoms and sexual dysfunction. Patients with diabetes have an increased incidence of atherosclerotic cardiovascular, peripheral arterial and cerebrovascular disease. Hypertension and abnormalities of lipoprotein metabolism are often found in people with diabetes.

Quality improvement (QI) consists of systematic and continuous actions that lead to measurable improvement in health care services and the health status of targeted patient groups. The Institute of Medicine (IOM) defines quality in health care as a direct correlation between the level of improved health services and the desired health outcomes of individuals and populations (2).

Benefits of running quality improvement program:

- Improved patient health (clinical) outcomes that involve both process outcomes (e.g., provide recommended

screenings) and health outcomes (e.g., decreased morbidity and mortality).

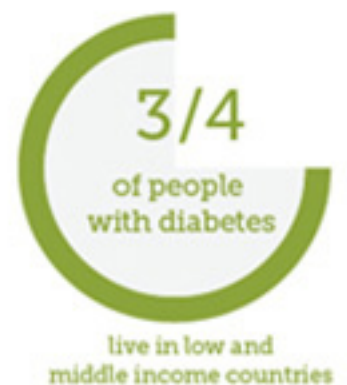
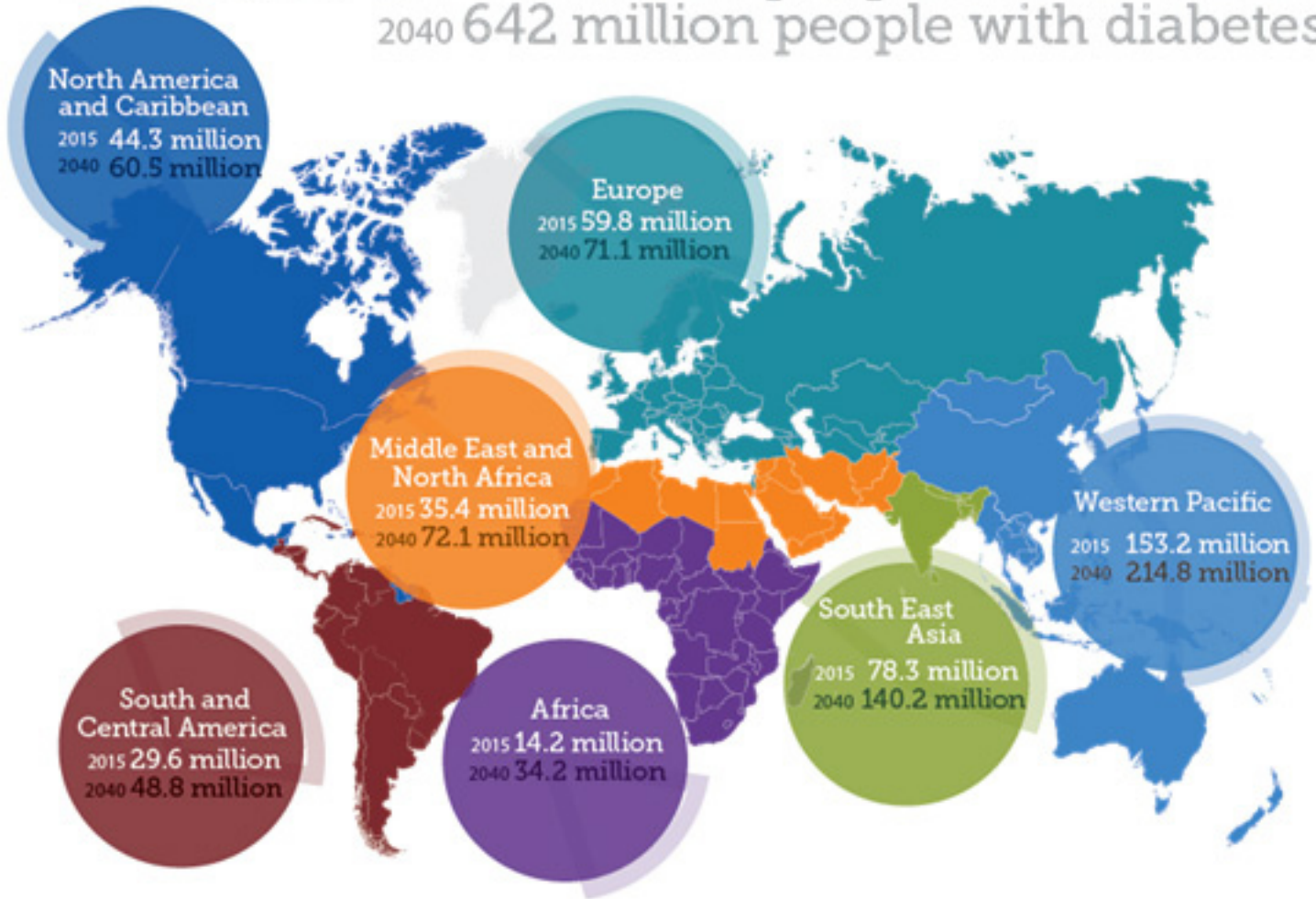
- Improved efficiency of managerial and clinical processes. By improving processes and outcomes relevant to high-priority health needs, the services reduce waste and costs associated with system failures and redundancy.

- Support proactive processes that recognize and solve problems before they occur to ensure that systems of care are reliable and predictable. A culture of improvement frequently develops in service that is committed to quality, because errors were reported and addressed.

- Improved communication with resources that are internal and external to service, such as, funders, civic and community organizations. A commitment to quality shines a positive light on the service, which may result in an increase of partnership and funding opportunities. When successfully implemented, a QI infrastructure often enhances communication and resolves critical issues.

Rationale

Worldwide 2015 415 million people with diabetes
2040 642 million people with diabetes



In 2015, IDF estimates that (1):



One in 11 adults has diabetes



One in two adults with diabetes is undiagnosed



One in seven births is affected by gestational diabetes



Three quarters of people with diabetes live in low and middle income countries



12% of global health expenditure is spent on diabetes (\$673 billion)



542,000 children have type 1 diabetes

Objective

To postulate a model of care merging between practical and quality improvement concepts.

Methodology

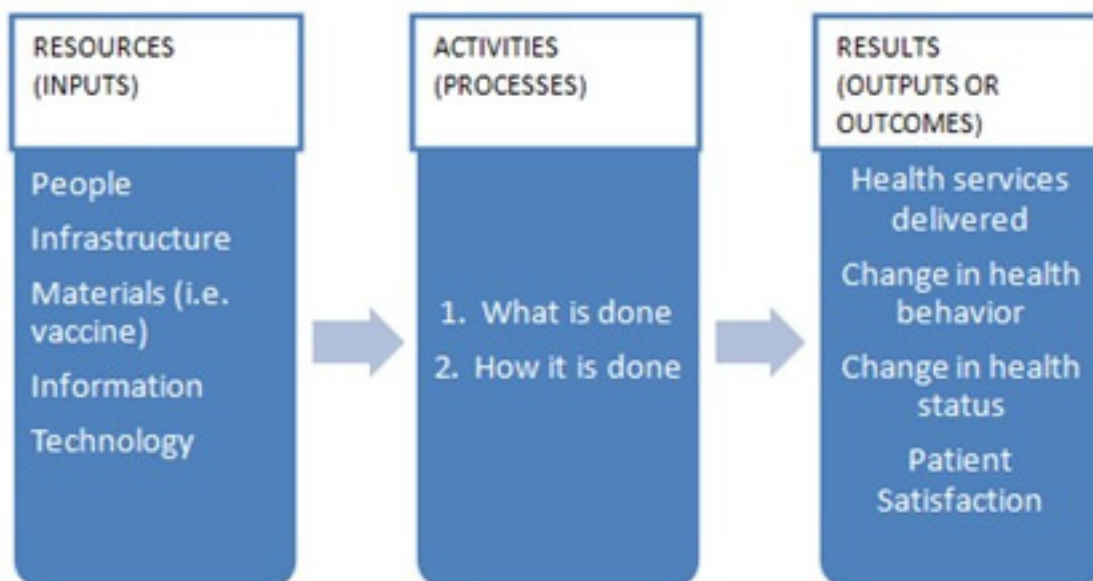
The concept of quality should be inspired through diabetes care services at their different levels. The domains of quality should encircle diabetes care (Figure 2).

Figure 2: Domains of quality



Diabetes care services need to be measurable services. Diabetes care affected by multiple factors. These factors can be classified as resources, process and outcome factors (Figure 3) (3).

Figure 3: Inputs, Processes and Outputs/Outcomes



To make improvements, the service needs to understand its own delivery system and key processes. The concepts behind the QI approaches recognize that both resources (inputs) and activities carried out (processes) are addressed together to ensure or improve quality of care (outputs/outcomes) (4).

A health service delivery system can be small and simple, such as, diabetic clinic, or large and complex, like diabetes care center. QI can assume many forms and is most effective if it was individualized to meet the needs of a specific organization's health service delivery system.

A Quality Management System is "The organizational structure, processes, procedures and resources needed to implement, maintain and continually improve the management of quality". This is accomplished by creating an integrated "system" that is process centered, has total employee involvement and is completely customer focused. Creating a culture that is customer focused and collecting and studying data that supports efforts for the customer are critical components to the system.

Steps to Creating quality improvement system at diabetes care services (Moutaz's Model):

1) Clarify Vision, Mission and Values : All staff of diabetes care services with their different positions in the service need to understand where the service is headed (its vision), what it hopes to accomplish (mission) and the operational principles (values) that will steer its priorities and decision making.

2) Identify Critical Success Factors (CSF): Critical success factors help diabetes care service focus on those things that help it meet objectives and move a little closer to achieving its mission.

3) Develop Measures and Metrics to Track CSF Data: Once critical success factors identified, there needs to be measurements put in place to monitor and track progress (Figure 6).

4) Identify Key Customer Group: Every diabetes care service has customers and understanding who the key customer groups are is important so that services can be developed based on customer requirements. The mistake a lot of diabetes care services make is not acknowledging their own staff as a key customer group.

5) Solicit Customer Feedback: The only way for an organization to know how well they are meeting customer requirements is by simply asking the question. There should be a structured process to solicit feedback from each customer group in an effort to identify what is important to them. Diabetes care services often make the mistake of thinking they know what is important to customers and ask the wrong survey questions

6) Develop Survey Tool: Next develop a customer satisfaction survey tool that is based on finding out what is important to customers. For example, customers might care more about quality than cost but if you are developing a service, trying to keep the cost down, and skimping on the quality, you are creating a service that might not meet the needs of the customer.

7) Survey Each Customer Group: Each customer group should have a survey customized to their particular requirements and they should be surveyed to establish baseline data on the customers' perception of current practice. This provides a starting point for improvements and demonstrates progress as improvement plans are implemented

8) Develop Improvement Plan: Once the baseline is established, you should develop an improvement plan based on customer feedback from each group. Improvement plans should be written in SMART goals format.

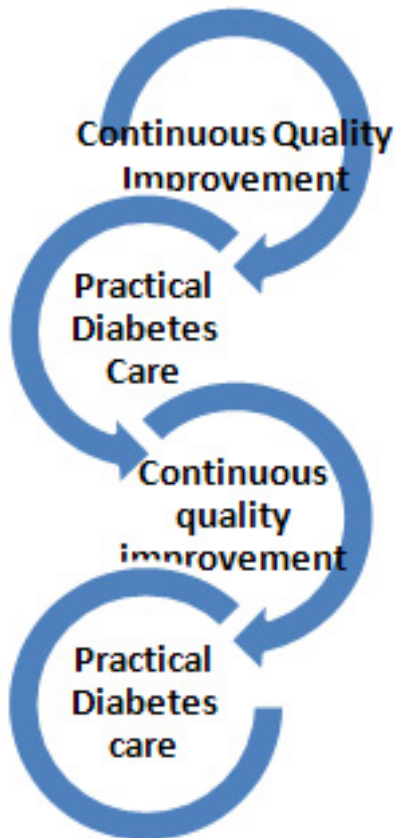
9) Resurvey: After a period, resurvey key customers to see if scores have improved. Customer needs and expectations change over time so being in-tune to changing needs and expectations is critical to long-term success.

10) Monitor CSF: It is important to monitor CSF to ensure there is consistent progress toward goals. This also allows for course correction should priorities and objectives change during the review period.

11) Share Satisfaction Data with service customers: Once you have achieved some positive results with the satisfaction data, use it as an empowering tool! Many successful diabetes care services miss the boat by not letting others know what they do well. Customers want to know how the diabetes care service's internal processes work especially if those processes help to deliver an outstanding product or service!

12) Technology: Make sure technology is user-friendly and supports targeted improvements. For example, a website should be easy to navigate and the content should be easy to understand.

Practical Diabetes care and continuous quality improvement need to run together to produce an effective system of diabetes care (Figure 5)

Figure 5: Proper Diabetes care system**Measurements of diabetes care services:**

Quality measure sets generally include 2 types of measures; Process measures captures the rate of use of specific, evidence-based processes of care for example, A1C screening, eye exams and Outcome measures which report a change in patient condition. For example, percentage of patients achieving A1C goals (5 - 6).

Discussion

Implementation of a quality improvement system affects positively the outcome of diabetes care services. WU Wy and his colleagues (7) conducted a retrospective comparison study in eastern New York state to assess the effect of quality improvement organization activities on outpatient diabetes care. They concluded that quality improvement organization activities could improve outpatients' care. P value significantly differed ($P < 0.001$) between participating and non-participating providers on their performance in 3 quality measures. Equality is one of the quality domains. In a study done by Thomas D Sequist et al (8) assessing the effect of quality improvement on racial disparities in diabetes care, the researchers concluded that racial disparities were diminished in some aspects of diabetes care following variably successful quality improvement.

Another study done in India recruited 1150 patients with diabetes and poor cardio-metabolic profiles who were randomly assigned to a multicomponent QI strategy or usual care for two and a half years (9). Results suggested that patient in the QI strategy group were twice as likely to

achieve combined diabetes care goals and larger reductions for each risk factor compared with usual care. Rachel Wilf-Miron et al (10) studied the association between improved quality diabetes indicators, health outcomes and costs. They concluded that their study demonstrates the effect of continuous improvement in quality care indicators, on health outcomes and resource utilization, among patients with diabetes. These findings support the business case for quality improvement, especially in healthcare systems with relatively low enrollee turnover, where providers, in the long term, could "harvest" their investments in improving quality.

Interesting systematic review and meta analysis by Tricco AC et al (11) showed that many trials of quality improvement strategies showed improvements in diabetes care. Interventions targeting the system of chronic disease management along with patient-mediated quality improvement strategies should be an important component of interventions aimed at improving diabetes management. Interventions solely targeting health-care professionals seem to be beneficial only if baseline HbA1c control is poor.

On the other hand, Shojania KG et al (12) in their systematic review and meta-analysis concluded that most quality improvement strategies produced small to modest improvements in glycemic control. Team changes and case management showed more robust improvements, especially for interventions in which case managers could adjust medications without awaiting physician approval. Estimates of the effectiveness of other specific QI strategies may have been limited by difficulty in classifying complex interventions, insufficient numbers of studies, and publication bias.

In general, integration of quality improvement systems and programs into diabetes care add to the outcomes of the service.

Conclusion

Running a quality improvement system through practical diabetes care will change the process of care from static service into dynamic, changeable service. Isolated practical diabetes care without continuous quality improvement could be one of the reasons for failure of controlling diabetes spread.

Pract 1:2-4, 1998

Figure 6: Measurements for diabetes care service

Type	KPI
O	% of DM patients with HbA1c <7%
O	% of DM patients with HbA1c >9%
P	Patient who performed 2 HbA1c in last year (at least 3 months apart)
P	% of DM patients who had BP checked at each visit
O	% of DM patients with BP < 140/90mmHg (mean of two visits)
P	% of DM patients who performed total lipid profile once/year
O	% of DM patients with LDL<100mg/dl
O	% of DM patients with LDL-C <130 mg/dL
P	% of DM patients who had WC measured
O	% of DM patients who had WC>=102cm in male patients
O	% of DM patients who had WC>=88 on female patients
P	% of DM patients who had BMI recorded each visit
O	% of DM patients who have normal weight (NMI 18.5 – 24.9)
O	% of DM patients who are overweight (BMI 25 – 29.9)
O	% of DM patients who are obese (BMI> 30)
P	% of DM patients who have had smoking status documented
P	% of DM patients who are current smoker
P	% of DM patients who were referred to smoking cessation services
P	% of DM patient whose CV risk has been calculated and documented
P	% of DM patients who are on metformin
P	% of DM patients who are > 40 years on statin
P	% of DM patients who are on aspirin for high and very high CVD risk assessment
P	% of DM patients who have had Microalbuminuria screening test in the last 12 months
P	% of DM patients who have had eGFR in the last 12 months
P	% of DM patients who had retinal camera screening in last 12 month
P	% of positive retinal image referred to retinal team for feedback
P	% of DM patients who have ophthalmology clinic referral for dilated eye exam in the last 2 year
O	% of DM patients develop blindness per year
P	% of DM patients who were referred for a dental exam in the last 12 months
P	% of DM patients who had comprehensive foot examination documented in the last 12 month
P	% of DM patients files with documented Self – management goals
O	% of DM patients who have had one pneumococcal / Prevnar vaccine
O	% of DM patients who had influenza vaccine in the last 12 months
P	% of DM patients who were referred to dietitian
P	% of DM patients who attended dietitian clinic

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PowerPoint presentations in Medical Conferences in Iraq. (A Qualitative Study)

Ali A. Kadhim Abutiheen

Correspondence:

Dr. Ali A. Kadhim Abutiheen, M.B, Ch.B. - F.I.B.M.S. (Consultant Family Physician)

Assistant Professor - Chairman

Family & Community Medicine Department

Kerbala University

College of Medicine

Iraq

Email: aliabutiheen@yahoo.com, aliabutiheen@uokerbala.edu.iq

Abstract

Background: PowerPoint (PPT) presentations are the predominant kind of presentations used in medical lectures, seminars and conferences in recent years. Many physicians and scientists are unaware of the rules and guidelines in preparing and conducting PPT presentations including many aspects of it.

Objectives: To evaluate the state of PowerPoint presentations and related matters in Medical Conferences in Iraq.

Methods: This was a mixed qualitative study, using observational approach. A checklist prepared by the investigator, was used to predict certain aspects in presentations, presenters approach as well as conference organization. Eight conferences were included from 4 governorates in Iraq for the period from November 2009 to December 2011. A total of 102 PowerPoint presentations were included in the study. Oral approval from the head of the conference or organizing committee of the conferences was taken prior to doing these observations.

Results: One out of the 8 conferences starts on time with an average 30 minutes delay. Thirty one (30%) of presenters are facing problems, 43 (42%) use very small size in some of their slides, 36 (35%) had mismatched colours. Fifty (49%) used more than 15 lines per slides and 12 (12%) used more than 20 lines per slide.

Too many slides per presentation were noticed with 28 and 37 using extra slides and 19 using over animation in some slides. Laser pointers were used by 39 of the presenters, 13 (33%) of those used it in a non-proper way, while 15 had delays for 5 minutes and more. Side talks, mobile rings and mobile talk were present in more than 40% of presentations.

Conclusions and Recommendations: Many problems were noticed with presentations in medical conferences. Organisers need to consider time delay, duration given for presenters, logistics, conference hall preparation, selection and role of chair persons and to assure a quiet environment. Presenters should give consideration to their facing, voice, pointer use as well as their slide preparation as well as skills in giving an effective presentation.

Key words: PowerPoint, PowerPoint Presentation, Conference, Effective presentation, Information and Communication Technology, Iraq

Introduction

Educational technology and audiovisual aids had become an integral part of teaching, training and giving lectures or presentations all over the world (1-3). Technology and the term Information and Communication Technology (ICT) are widely used, and have become an essential element of teaching environment in universities and institutes (4-7).

PowerPoint (PPT) presentations are the predominant kind of presentations used in medical lectures, seminars and conferences in recent years as well as in other sciences. Teachers and scientists should know how to use ICT; even the general population should know the proper use of it in this era (1, 8-10). PPT can help in organizing thoughts, time management and getting attention and attraction of the audience. In addition, most audiences like PPT presentations as they can follow and remember the presentation (4, 7, 9, 11-13).

As any other technique or tool, PPT has some weak points or disadvantages. Edward Tufte and others have criticized PPT as being an evil and the worst invention, for being teacher centered, decreased thinking of the audience and other issues (14-18). Though these limitations could be related to the person constructing the PPT slides or the presenter themselves not the program (6, 17, 19-21). This argument might be usual event with any invention.

Unfortunately, many presenters use PPT improperly; thus it becomes distracting, dissociative and decreases the effectiveness of the presentation, instead of being additive and focused on the presentation content. This could be related to the fact that many physicians, teachers and researchers are unaware of the rules and guidelines of preparing and conducting PPT presentations and slides, while others have little experience with computers and programs or are not trained on how to make an effective presentation (7, 22, 23).

Frequently presenters rely on the PPT, reading slides from the laptops or screen, moving slides, and thus losing communication and eye to eye contact with the audience. Missing a basic rule of facing in the audience's direction, not the slides; he/she should be the focus of attention, not the screen. PPT should add to his/her talk, and deal with it as a supplement or an aid (20, 24-29).

An effective presentation should be interactive. Success and productivity of a presentation depends on presenters' ability, experience of how to communicate with the audience, gain their attention and use body languages efficiently, rather than type and quality of the visual aids used (22, 26, 30).

Presenters' voices should be clear and audible to all attendants while a soft monotonous voice will negatively affect the presentation. Presenters should speak at a suitable pace, not being fast and should finish on time. To achieve that, rehearsing and practicing will help, as well as other issues related to presentation and its

effectiveness (8, 22, 26, 27, 30-33). Another helpful rule in time management is "the lesser number of slides in a presentation the better" and do not use over two slides per minute (34, 35). So for a 15 minutes presentation your slides should not to exceed 30 while 20-25 slides, or even less, will be most suitable.

Designing of PPT slides is a major factor related to the effectiveness of the presentation, and the basic rules in preparing slides are:

- Keep simple design first and use a clear font.
- Use same design, fonts and colours for all slides.
- Keep slides margins clear.
- Use small letters, it is easier to read and writing in capital letters should be restricted to titles or keywords.
- The lesser the words in a slide the better.
- Bigger size of font is better; size for titles should be bigger than text.
- Suitable size for text is 30-36, and do not use text size less than 24, even in small halls, and many writers recommend larger size. (11, 19, 20, 25, 33, 35-41).

A common pitfall in preparing slides is putting too many words in a slide. To overcome this issue the rule of six or (6*6) should be followed. This means that each slide should not contain over six lines and each line should not contain over six words. Some researchers refer to the rule of seven, others recommend five lines, but the majority agree that it should not exceed eight lines per slide. Others advise a maximum of twenty words per slide (8, 12, 20, 31, 35-37, 42).

Colour use in designing slides is liked by presenter and audience, but too many colours are distracting. Not more than 4 colours per slide is advised. Select text colours to match with background colour, and contrast with it. So use dark colours on light background and light colours on dark backgrounds. Avoid combination of colours as it is difficult to read (35-37, 40).

I prefer a light background (light not shiny) and dark text as it less affected by lighting of the halls. Lighting of the hall is often needed and asked for by media and photographers covering conferences. Also keeping a little lighting is better for communication as the presenter can see the audience and it is advisable to decrease sleepiness and eye fatigue (41). Sleeping in conferences or lectures is not uncommon.

Special effects in PPT design such as animation and sound effects could add to presentation a touch of life or action. But overuse of them are distracting and annoying (4, 8, 9, 17, 33, 35, 36, 38, 40, 43, 44). The same is true with a laser pointer, which is frequently used by many presenters, if its use is non proper or unnecessary (22, 26).

Images are easier to understand and stay in the mind of audience, but too many or nonrelated images may distract the audience. However, avoid using images as a background. Also graphs and charts will be much

easier to read than tables. Tables are more suitable for publication than presentation. Try to replace tables by graphs whenever possible in PPT, but graphs should be easy for visualization and understood. Use of videos or any multimedia in presentation can add and stay in the mind longer, as long as it is related to the topic, and time allocated is enough. (17, 19, 21, 25, 33, 40, 42, 45, 46).

After all remember that audiences are sitting in the hall to watch and listen to your talk, research notes, updates, thoughts and your experience in the medical or other field, not to your experience in PPT program techniques, animation, and use of colours, or to see unrelated pictures or shapes. And as you use technology and PPT you should know how to deal with it, or at least the ABC of that. Always be ready for alternative ways to give the presentation if technology fails you, or electricity goes off.

However, if circumstances forced you to give a presentation, or for any reason you want the audience not to understand your talk or open discussion, you can use the opposite of above mentioned PPT rules.

Many pitfalls and problems have been noted with preparing PPT slides, audiovisuals use, giving presentations, and in organization of the conferences in Iraq. Issues that presenters or organization committees miss or underestimate, may have negative effects on attendants, outcomes of presentations and the conference. So the objective of this study was to evaluate the state of PPT presentations and some related issues in medical conferences' organization in Iraq.

Methods

This was a mixed qualitative research study, using observational approach. The study included 8 medical conferences or symposia held in 4 different provinces in Iraq for the period from November 2009 to December 2011; the organizers of the conferences were different parties: Ministry of Health, Ministry of Higher Education and Scientific Research, Medical Societies and some were cooperations between them. Selection of the presentation was random, depending on sequences of the presentation in the conference and the availability of the investigator.

A special checklist was prepared by the investigator, in order to predict certain aspects in PPT presentation, the presenters' approach as well as conference organizations while attending conferences, such as: starting time of conference with schedule, starting of sessions, time allocated for presentation, the introduction of the presenters by chairs of session (whether adequate or non-adequate or not observed).

Issues related to the presenter included the following: facing (good, accepted, non-accepted); voice (good, accepted, non-accepted); font type (clear, accepted, non-clear); Font size (large = read easily, small = difficult to read, very small = very difficult or could not be read);

colours used (good = matched, accepted, non-accepted = mismatched); too many colours (more than 5/slides); number of lines per slide (?10, 11-15, 16-19, ? 20); use of pictures; tables and graphs (not used, good, accepted, non-accepted= very difficult or could not be recognized, not observed); use of laser pointer in presentation, any method of usage of it (good, accepted, misuse or overuse "when its use is distracting or over-moved in annoying way").

Also number of slides per presentation (good, accepted, too many); extra-slides presence "slides that were not presented or discussed and just passed on by presenters"; Animation (good or accepted, overuse, not observed); the pace or speed of presenter (good, accepted, fast); commitment with time (finish on time or before, delay 2-3 minutes, delay for 5 minutes or more); time notification (notified on time or not); response to notification (did not respond, responded positively, not good response).

Other issues checked include: presence of side talks, mobile ringing, mobile talk, quality and arrangement of audiovisuals, disruption or interruption of the presentations, and discussion time as well any specific related issues.

To conduct these observations an oral approval from the head of conference or head of organizing committee of the conferences was taken prior to doing these observations. Also names of conferences were kept hidden only for the researcher, and even names of presenters and their background not recorded. Observations were translated to frequencies and percentages and data expressed as tables or figures.

Results

A total of 102 PPT presentations were included in the study from 8 conferences conducted in four different Iraqi governorates. Only one conference (12.5%) started on time of schedule with average 30 minutes delay and one started after 2 hours, while nearly one third of presentations had some problems in audiovisuals or lighting of the conference hall.

Ninety seven (95.1%) presenters were introduced in a good to accepted way by the chairs of sessions. And 94 (92.2%) of them greeted or thanked the chair or audience before starting their presentation. However 6 (5.9%) had a weak or monotonous voice as shown in Table 1. Also facing and eye contact problems with attendants were noticed with 31 (30.4%) of the presenters (Figure 1).

There was little problem with type of font used, most of them were clear and readable, and only 1 (1%) used non-accepted font. While 92 (90.2%) used small size font and 43 (42.2%) used very small size in some of the slides they used.

Fifty (49.2%) used more than 15 lines per slide, while 12 (11.8%) used more than 20 lines per slide in some of their slides (Figure 2). Too many slides per presentation were noted with 28 (27.5%), and 37 (36.3%) used extra slides.

Table 1: Frequency and Percentage of certain attitudes observed

	Variable	Frequency 102	Percentage 100.0%
Introduction	Positive	97	95.1%
	Positive but non-adequate	5	4.9%
Greeting	Positive	94	92.2%
	Negative	8	7.8%
Voice	Good	78	76.5%
	Accepted	18	17.6%
	Non accepted	6	5.9%
Font type	Good	72	70.6
	Accepted	29	28.4
	Non accepted	1	1.0
Pointer use	Used	39	38.2
	Not used	63	61.8
Speed	Good	59	57.9%
	Accepted	34	33.3%
	Fast	9	8.8%
Duration	Finish within time	73	71.6%
	Extra 2-3	14	13.7%
	≥ 5 minutes	15	14.7%
Side talk	Negative	60	58.8%
	Little	38	37.3%
	Noise	4	3.9%

Regarding colours, 36 (35.3%) had mismatched colours in their slides while 10 (9.8%) used too many colours in some slides, and 30 (30%) used some graphs or tables that were difficult to be seen or understood (Figure 3)

Over animation was noted with 19 (18.6%) of presenters while laser pointers were used by 39 (38.2%) of presenters; of those 13 (33.3%) used it in a non-proper way or unnecessarily (Figure 4).

Nine (8.8%) of presenters were fast in their presentations and 73 (71.6%) finished on time while 15 (14.7%) delayed for 5 minutes and more. Forty (39.2%) presenters were notified on time, and 7 (6.9%) notified for more than one time after time was exceeded. However the response for notification was weak in 13 (32.5%) while 4 (10%) ignored time notification.

Side talks, mobile rings and mobile talk was present during 42 (41.2%) presentations, and about 12 (11.8%) presentations were interrupted, and in most cases by power off or audiovisual problems.

Figure 1: Condition of Presenters facing the audience

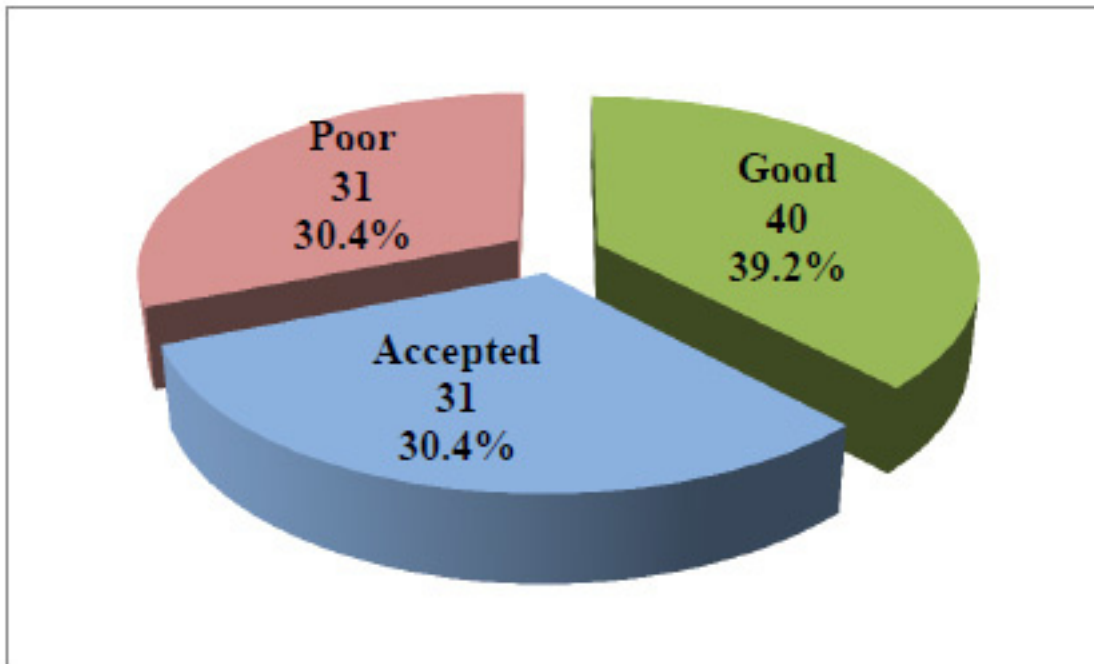


Figure 2: Number of lines/slide showed by presenters in some of their slides

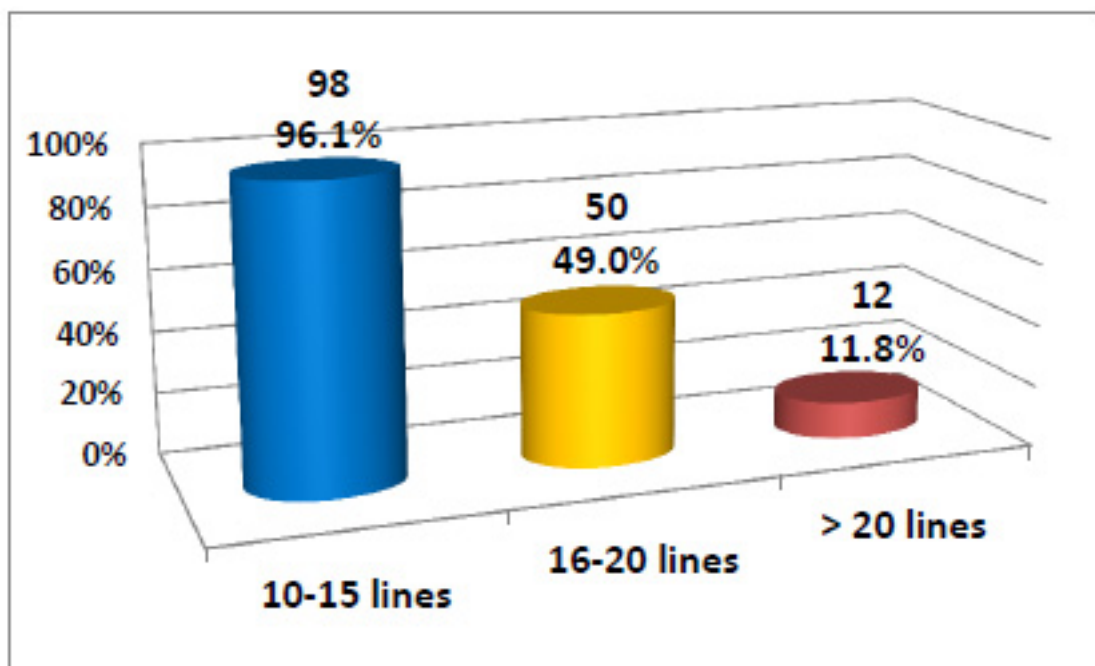


Figure 3: Distribution of colours used in slides

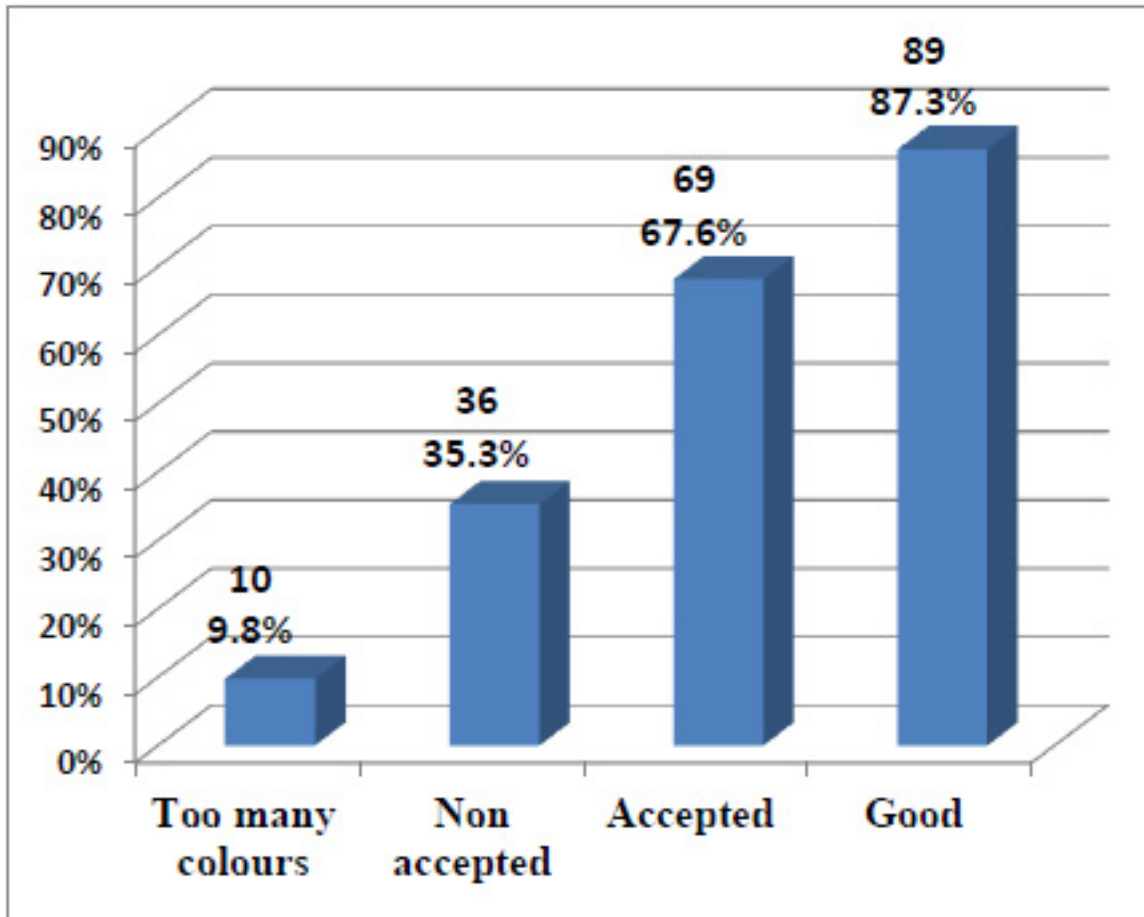


Figure 4: Status of tables and graphs presented.*(2 presentations didn't include tables)

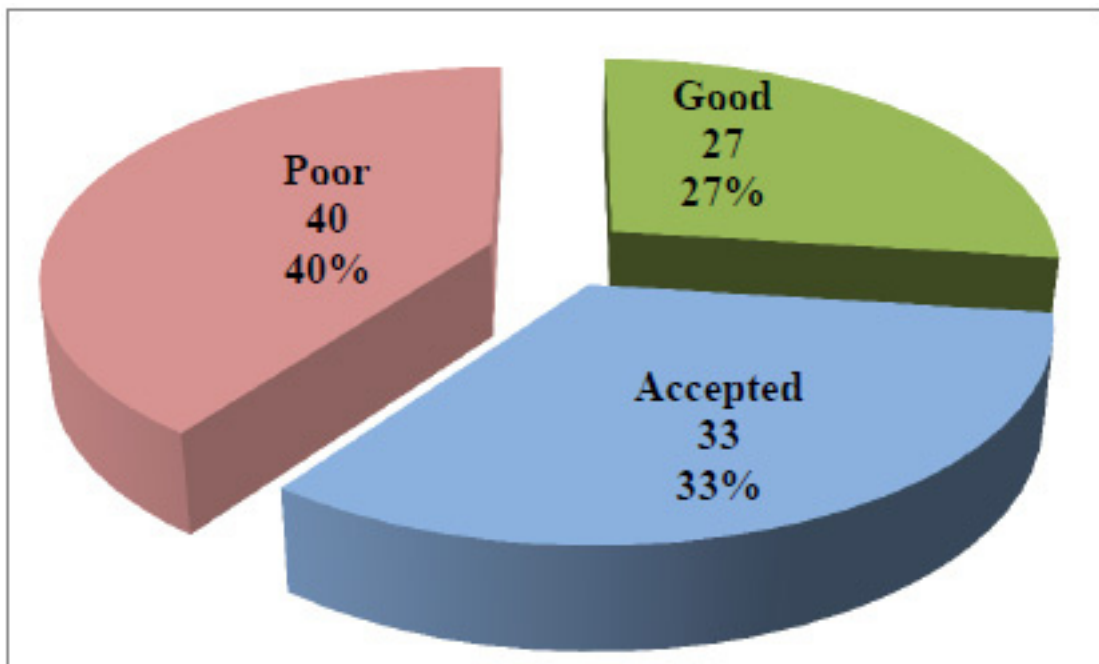
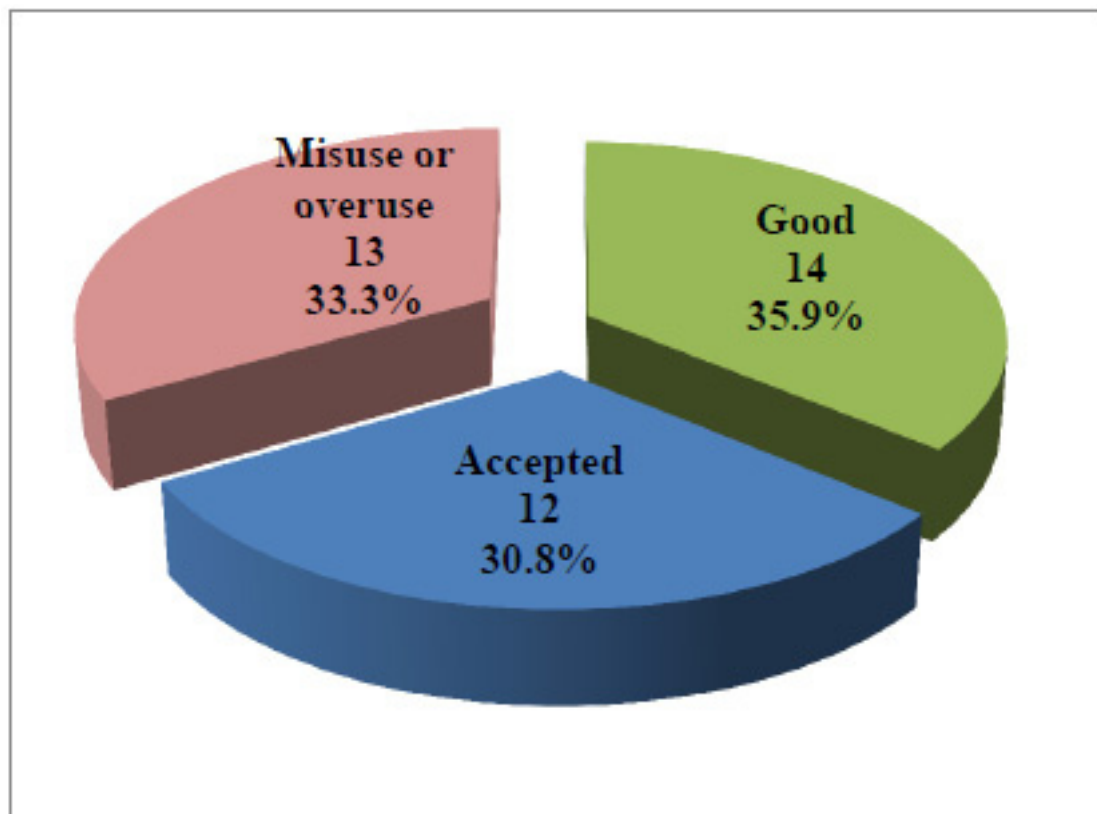


Figure 5: Laser pointer usage status

Discussion

PowerPoint presentations use in teaching, learning and scientific conferences are increasing day after day. Microsoft in 2001 estimated there were over 30 million PPT presentation per day, so imagine the number nowadays (1, 28, 29). Consider Ian Parker's words "appearing in meeting nowadays without a PPT is just like wearing no shoes" (47).

So researchers, teachers, scientists should have competent skills on how to prepare a PPT, using technology fairly and giving an effective presentation. Each of these areas may lead to bad or non-effective presentations. Also they can be boring and have a negative impact on learning, content, attendance and retention of knowledge (14, 17, 21, 28, 42, 48-50).

Delay of conferences opening was quite common for different reasons. But a common reason was waiting for attendance of main guests such as ministers, university chancellor, etc., who usually had an opening speech. Also the delay was present in most lectures sessions openings. However, non-respect to time could be a social problem in Iraq. As most meetings and conferences were delayed in Iraq up to the highest political or governmental meetings or even writing the Iraqi Constitution.

Poor preparedness of the main hall, audiovisuals and computers were noted, and these issues had negative effects on presenters and materials. Also many times the PPT was on flash ram or CD and not on main computer, and had not been tested. Some organizers set low sited

datashows that were affected by passing of guests or organizing staff in front of the screen.

Poor facing to audience was present in nearly one third of presenters. This may reflect that many presenters were not aware or had not considered this issue. Though sometimes it was the conference organizers' fault who did not put a laptop or screen in front of presenter. This mandated the presenter to read from the screen and put his/her back to the audience. Some presenters were smart enough to try to overcome this situation every now and then by talking to audience, while others kept talking without any consideration. Another problem noticed, was that the slides movement was not done by the presenters. So that handicapped the presenter and required them to tell a person in charge to move slides (next, next..). This was more problematic if the slides were not organized, if they wanted to go back to a certain slide and if there were extra slides. On the other hand some presenters had very little experience with computers or PPT programs and were be keen for someone to move their slides.

In one conference there was a laptop in front of presenters but the show was from another computer that was connected to a datashow. Though they offered some help, it was confusing for presenter as well as audience.

As in most conferences, the presenter should stand in an almost fixed, static area that gives no or very little space for movement. So organizers should arrange a laptop or screen in front of them, and he/she should be responsible for slides transition, and presenters should know how to do it. However, an important issue is that presenters should

be aware and care about facing the audience as well as using effective body language. The use of remote devices in presenters' hands would be very helpful supposing that presenters are familiar with the use of them. This can give more freedom to move and use body language.

Minor problems appeared with introduction of presenters to audience, but occasionally it wasn't fair enough. Also the thanks and greetings from presenters to audience and chairmen was good. Voice problems were not that common and many times related to audio devices and microphones. But more voice problems were noticed in discussion sessions, where portable microphones were poorly functioning.

A majority use small size font, and 42% used very small size font that was difficult to be read. However this issue is directly related to number of lines used per slide, as 49% and 12% had used slides with 15-19 and more than 20 lines/ slide respectively. This reflects a major problem that is very awful to read, if one can read it in the first place. This was greatly associated with tables presented, as only 14% of tables were good. So presenters should reconsider the use of tables in their presentation or use suitable graphs instead if applicable.

Misuse of laser pointer was noticed with one third of its users. However if the slides were prepared according to PPT slides preparation rules, there would be less or even no need for the use of laser pointer. Instead one can use the cursors present on computer keyboards and as Jannette Collins explain in her useful article(26).

Big numbers of slides were noticed in 28% of presentations, and 38% included some extra slides or unnecessary slides, that not been shown or discussed. Some included tens of these slides. This reflects poor preparation, poor time management, no consideration for time allocation for each slide and even no review of PPT, or rehearsal.

Good colour match was the predominant feature, however non-accepted or poorly matched colours appeared in nearly one third of presentations. On other hand 10% of presenters used too many colours in one slide or more. This could be related to unawareness of colours matching issue, or they thought that shining and frequent colours added to PPT, while the reverse could happen. Similar explanations could account for use of over animation that was present in nearly one fifth of presentations.

We believe that 10 minute presentations, that were the most prevalent duration given, is not a fair time to give for a research presentation or an update. Duration of 15-20 minutes is more suitable, or should be the minimum time to be given. Moreover, when being beyond time for any reason, the chairperson tends to, or been asked to reduce time allocated on the schedule for even less than 10 minutes.

Short duration increased the act of giving fast presentation that is a non preferred event, even if it appeared only in 9% of presentations. Going fast was also affected by bulk of data presented, big number of slides, and running out of time. Short duration given could give a hint as to why some presenters exceeded time given for them. But definitely it was not the only excuse as 15% exceeded 5 minute delays, while others took more than double the time and ignored the recurrent notifications on time.

Side talks and mobile rings lead to distraction and non-calm or noisy environment and it was present in more than 40% of presentations. Mobile rings were heard not only from audience, but sometimes from the presenters themselves and even from the chair committee who sometimes had side talks. Furthermore some chairpersons, were not monitoring time, leaving presenters to exceed time allocated for them; that is a major responsibility for a chair person.

Interruption of presentation was another unpleasant event and unfortunately it was present in nearly 10% of presentations though electricity going off, which is a common event in Iraq was the main cause. Sometimes the cause was related to audio-visuals malfunction and weak preparedness of the organizing committee.

The fact that only one person evaluated the presentations, is one of the limitation of this study. But it could be a strength also, as multiple observers would have different standards and ranking. After all the study aims to highlight the issue, to try to raise standards of PPT presentation design, conference organization, and effective lecturing. Another limitation was the general difficulty of recording observations while attending an event, as we are humans and we cannot record all observations.

Presenters in these conferences were from all over Iraq, and many of them were not physicians. So what appeared in these medical conferences can be applied to scientific conferences in other fields, and actually same issues noticed in them out of this study.

In conclusion, there are many pitfalls with presentations in medical conferences in Iraq. Medical colleges, conferences' organizers and medical personnel need to give more efforts for PPT slides preparation based on specific rules. Also they need to consider time delay, duration given for presenters, logistics, conference hall preparation, selection and role of chair persons and to assure a quiet environment. Presenters should give consideration to their facing, voice, pointer use as well as their slide preparation as well as skills in giving an effective presentation. Further studies on this area and issues are recommended.

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Narrowband UVB Therapy in Yemeni Patients

Amer Omer Bin Zou (1)
Asia Hussain Al-Asbahi (1)
Maysa Saeed Al-Noban (2)

(1) Assistant Professor, Department of Dermatology, Faculty of Medicine, University of Aden
(2) Lecturer, Department of Community medicine and Public Health, Faculty of Medicine, University of Aden

Correspondence:

Dr. Amer Omer Bin Al-Zou
Assistant professor, dermatology,
Faculty of medicine, University of Aden, Yemen.
Mobile: +967 736 361 344
Email: amer_zou2009@yahoo.com

Abstract

Objective: This study aimed to assess the usefulness of narrow band UVB (NB-UVB) therapy in Yemeni patients with different skin conditions.

Methods: A prospective clinical audit was conducted of 120 Yemeni patients (45 males and 75 females), aged 5-54 years from all patients with different skin diseases in dermatology clinic (January 2013 - May 2014), treated by NB-UVB irradiation without being combined with topical steroid or topical chemotherapy during the course of the study.

Results: 120 patients enrolled in this study with mean age 25.8 ± 12.6 years old. Females consisted of the major rate (62.5%), and patients who came from Aden had a high rate (77.5%).

Ninety four (78.3%) patients had complete response to treatment, 6.7% had partial and 15% had no response. Mycosis fungoid and atopic dermatitis had a high mean number of session (84.50 ± 0.70), followed by vitiligo with mean number of sessions 27.10 ± 23.70 . The Lichen

planus, Mycosis and Pityriasis had complete response (100%) to treatment, followed by vitiligo 79.3%, while partial response appeared in patients with alopecia (66.7%) and atopic dermatitis (22.2%). Patients with chronic renal failure had no response to treatment in 33.3%, followed by Parapsoriasis (20%).

Conclusion: Our study proves that NB-UVB therapy is an effective and safe tool in the management of skin diseases and is considered the first-line phototherapeutic option for many skin conditions.

Key words: Narrowband UVB, Phototherapy, Skin Diseases, Response.

Introduction

For years, phototherapy has been used in a wide range of skin diseases, which is unsurprising as skin is the anatomical feature most directly exposed to light. Phototherapy became a common practice in dermatology at the beginning of the 20th century, when Goeckerman introduced a combination of coal tar and UVB. Later, Ingram developed a similar treatment protocol, which consisted of a 15-30-minute bath in a tar solution followed by a UVB dose. It started with 30-50% of the minimum erythema dose and this light dose was increased by 30-50% at each session. Subsequently, an anthralin paste with low concentrations (0.05-0.1%) was applied to and maintained on the treated intertegument for 6-24 hours (1).

Nowadays phototherapy is a popular treatment option, which includes both of the generalized ultraviolet B (UVB) therapies, broadband UVB (BB-UVB) and narrowband UVB (NB-UVB). UVB delivers a high amount of energy to the stratum corneum and superficial layers of the epidermis and is primarily responsible for sunburn, suntan, and skin cancers. It produces tanning more efficiently than UVA (2).

Narrow band UVB (NB-UVB) with the wavelength range from 311 to 313 nm phototherapy offers potential for the future and is an established method for managing patients with psoriasis, as well as difficult eczema, atopic dermatitis (3) mycosis fungoides (4) and other skin disorders. It works by reducing inflammation in the skin using very narrowly defined wavelengths of UV light to reduce the problems and risks of broadband ultraviolet light typically seen with sun beds. It is effective with a fraction of the dose normally delivered by these commercial machines, reducing skin cancer risk and side effects. The results of present studies provides evidence that narrow band UVB is superior to broad band UVB as regards to the efficacy of the treatment of generalized lichen Planus patients. Narrow -band phototherapy has a higher ratio of therapeutic to erythemogenic activity, resulting in increased efficacy, reduced incidence of burning and longer remission (2). This study aimed to assess the usefulness of narrow band UVB (NB-UVB) therapy in Yemeni patients with different skin conditions.

Materials and Method

Our study is a descriptive prospective clinical audit of 120 patients with different skin diseases who were referred for Narrowband Ultraviolet B (NB-UVB) therapy at the dermatology clinic in Aden, Yemen.

All patients were treated with NB-UVB phototherapy alone without being combined with topical steroid or topical chemotherapy. The NB-UVB irradiation was performed in a UV7001K phototherapy cabinet (Waldmann, Villingen-Schwenningen, Germany) equipped with TL-01 lamps (Philips Lighting BV, Roosendaal, Netherlands) emitting

NB-UVB wavelengths between 311 and 313 nm. Fifty patients were of skin type III and 70 patients were of skin type IV.

Full history, general examination, and dermatological examination were carried out before starting treatment. Severity of psoriasis was ascertained using the Psoriasis Area Severity Index (PASI) score. The score ranges from 0 to 72.

The patients were treated three times weekly. We started with a standard starting dose (0.3 J/cm²) and stepwise increase (20% increase of the previous dose) depending upon the patient's erythema response, if mild erythema occurred, we decreased to the previous dose without further increase, in case of moderate or severe erythema, we stopped sessions until erythema faded and then started with 50% of the previous dose without further increase.

Improvement was considered as complete (75-100 %), partial (50 -75%) and no response (<50%).

Therapeutic efficacy and responses to phototherapy were clinically assessed by the researchers using clinical photographs with the same digital camera in the same position under controlled lighting conditions at each follow-up visit. Data were collected during the period January 2013 to May 2014.

The data was processed and analyzed by computer using SPSS program version 17. Percentage was calculated as summary measure for the qualitative variables. Mean and standard deviation were calculated for quantitative ones, to identify any significant relationship between the study variables. Chi-Square test was applied with a significance level of 0.05.

Result

Table 1 reveals the descriptive characteristics of the 120 patients. The age of patients ranged between 5-54 years with a mean age 25.8 ± 12.6 years. There were 38 (31.7%) cases in the age group 21-30 years followed by the age group 11-20 years.

Female patients represented 75 (62.5%) of cases. The majority of patients came from Aden governorate 93 (77.5%) and 58 (48.3%) of cases were vitiligo, followed by psoriasis 34(28.3%) cases.

Seventy nine (65.8%) of patients under phototherapy had no side effect, while 35 (29.2%) with hyperpigmentation, erythema 4(3.4%) and flaring and itching for each one 1(0.8%).

Table 1: Frequency of selected variables among the study patients (n=120)

Characteristics	NO	(%)
Age group (years):		
≤10	12	(10)
11-20	34	(28.3)
21-30	38	(31.7)
31-40	12	(10)
41-50	23	(19.2)
>50	1	(0.8)
Sex:		
Male	45	(37.5)
Female	75	(62.5)
Governorate:		
Aden	93	(77.5)
Other governorates	27	(22.5)
Diagnosis:		
Vitiligo	58	(48.3)
Psoriasis	34	(28.3)
Atopic dermatitis	9	(7.5)
Lichen planus	5	(4.2)
Parapsoriasis	5	(4.2)
Alopecia	3	(2.5)
Chronic renal failure	3	(2.5)
Mycosis fungoides	2	(1.7)
Pityriasis rubra pilaris	1	(0.8)
Side effect:		
None	79	(65.8)
Erythema	4	(3.4)
Flaring	1	(0.8)
Itching	1	(0.8)
Hyperpigmentation	35	(29.2)

Note: % taken from total cases (120)

The complete response appeared in 78.3% of cases, but 15% of cases had no response while partial response was 6.7% as shown in Table 2.

Table 2: Response rate of patients with different skin diseases

Response	No	%
Complete response	94	78.3
Partial response	8	6.7
No response	18	15
Total	120	100

The patients with mycosis fungoid and atopic dermatitis had high mean number of sessions (84.50 ± 0.70) and cumulative of Joules (81.69 ± 4.02), followed by the vitiligo with mean session 27.10 ± 23.70 and Joules 35.18 ± 56.89 as appears in Table 3.

Table 3: Frequency of study subject according to mean number of sessions

Diagnosed disease	Mean No. of session \pm SD	Mean cumulative dose (J/cm ²)
Mycosis fungoid	84.50 \pm 0.70	81.69 \pm 4.02
Atopic dermatitis	84.50 \pm 0.70	84.50 \pm 0.70
Vitiligo	27.10 \pm 23.70	35.18 \pm 56.89
Psoriasis	19.50 \pm 12.17	18.17 \pm 17.93
Parapsoriasis	18.40 \pm 16.31	17.60 \pm 24,95
Alopecia	16.33 \pm 13.65	12.48 \pm 14.99
Chronic renal failure	15 \pm 7.55	7.91 \pm 7.63
Pityriasis rubra pilaris	12 \pm 5.2	5.87 \pm 5.02
Lichen planus	11.8 \pm 5.45	6.35 \pm 6.30

Data are mean \pm standard deviation

According to Table 4, all cases of Lichen planus, Mycosis and Pityriasis enrolled in this study had complete response (100%) to treatment, followed by vitiligo with 79.3% complete response. Partial response appears in patients with alopecia with 66.7% and atopic dermatitis with 22.2%. One the cases with chronic renal failure had no response to treatment with 33.3%, followed by Parapsoriasis with 20%. There was a significant statistical relationship between response and type of skin diseases ($p=0.03$).

Table 4: Percentage of patients with degree of response after phototherapy

Diagnosis	Complete	Partial	No response	Total
Vitiligo	46 (79.3%)	2 (3.5%)	10 (17.2%)	58
Psoriasis	27 (79.4%)	2 (5.9%)	5(14.7%)	34
Atopic dermatitis	6 (66.7%)	2 (22.2%)	1(11.1%)	9
Lichen planus	5 (100%)	0 (0.0%)	0(0.0%)	5
Parapsoriasis	4 (80%)	0 (0.0%)	1 (20%)	5
Alopecia	1(33.3%)	2 (66.7%)	0(0.0%)	3
Chronic renal failure	2 (66.7%)	0 (0.0%)	1 (33.3%)	3
Mycosis fungoid	2 (100%)	0 (0.0%)	0 (0.0%)	2
Pityriasis	1 (100%)	0 (0.0%)	0 (0.0%)	1
Total	94(78.3%)	8(6.7%)	18(15%)	120

Chi-square ($p<0.05$)

As appears in Table 5 the complete response by use NB-UVB phototherapy had mean number of sessions 39.93 \pm 27.15 and mean cumulative dose of Joules 53.88 \pm 6042.

Table 5: Number of Session and Dose of Joules Needs for Complete Response

Response	Mean No. of session \pm SD	Mean cumulative dose (J/cm ²)
Complete	39.93 \pm 27.15	53.88 \pm 6042
Partial	23.30 \pm 19.04	27.00 \pm 44.84
No response	15.16 \pm 1.20	12.62 \pm 22.09

Figure 1 and Figure 2 show the vitiligo and psoriasis cases before and after phototherapy.

Figure 1: A, Case of psoriasis patient. B, Improvement with NB-UVB after 25 sessions



Figure 2: A, Vitiligo case. B, Repigmentation vitiligo patches after 45 sessions of NB-UVB treatment. C, after 63 sessions



Discussion

NB-UVB is effective in the treatment of such skin disorders, like plaque psoriasis, primary cutaneous T-cell lymphomas, atopic eczema, seborrhoeic dermatitis, pityriasis rubra pilaris, lichen planus, prurigo nodularis, uremic pruritus or even vitiligo (5,6). Since its development, use of NB-UVB has been prompted by a combination of its therapeutic efficacy and good safety profile regarding acute adverse events (7,8).

Our study could be considered as the first study in Aden, Yemen to study the benefit and outcome of using NB-UVB in dermatology clinic.

In the current study we found 65.8% of the patients under NB-UVB had no side effect, while 29.2% of them have hyperpigmentation and required time to resolve, 3.4% burning erythema.

A study from Malaysia mentioned that 3(16.7%) were excluded from treatment response analyses as treatment was prematurely discontinued due to development of side effects (9).

Shamsuddin et al (10) from Pakistan reported that 3(9.4%) patients developed moderate erythema which settled after using the standard protocol treatment guidelines while painful erythema was seen in none of their patients. Two (6.3%) patients complained of itching after phototherapy sessions which was managed by regular use of emollients. Generalized hyperpigmentation developed in all patients and lesional post-inflammatory hyperpigmentation occurred in 14(43.8%) patients.

In this study 78.3% of patients had complete response to treatment, but the partial response in this study was 6.7%.

Adauwiyah et al (9) reported in their evaluation of repigmentation response to NB-UVB, 40% patients had moderate response, 20% had good response and another 20% had excellent response while 13.3% patients responded poorly and 6.7% patients did not show any repigmentation.

In the present study patients with mycosis fungoid had complete response with 100%, and with mean session 84.50 ±0.70 and cumulative of Joules 81.69±4.02.

A study from Spain reported that 57% of patients with mycosis fungoid enrolled in the study had complete response (4).

Hofer et al (11) from Austria studied 20 patients, 6 with early-stage mycosis fungoides and 14 with small-plaque parapsoriasis, demonstrating a histopathologically confirmed complete response in 19 cases, after a mean of 20 sessions. The mean time to recurrence was 6 months after stopping phototherapy.

Clark et al (12) from Scotland observed a complete response in 6 out of 8 patients with patch-stage mycosis fungoid (75% of cases), after a mean of 26 treatment sessions (20-37 sessions), that is, 9 weeks of treatment.

A study done by Salah et al (13) from Jordan showed complete remission achieved in 76.4% of patients, within 5-14 weeks (mean 12.7 weeks). During this period, 15-42 sessions (mean 28.9 sessions), equivalent to a cumulative NB-UVB dose of 17.3-48.2 J/cm² (mean 38.7 J/cm²), were needed to achieve this rate of complete remission.

Our study revealed that atopic dermatitis had high mean number of session 84.50 ±0.70 and cumulative of Joules 84.50 ±0.70 and with 66.7% complete response.

There is a large body of evidence indicating that NB-UVB is effective in the treatment of atopic dermatitis (14). Hudson-Peacock et al (15) described a response rate of 81% with complete clearance in 43% for NB-UVB.

A randomized controlled double blind study with 73 patients treated with NB-UVB, broadband ultraviolet (bUVB)/ultraviolet A (UVA) or visible light twice a week showed NB-UVB to be most effective (16,17).

Haroon et al (18) in his study reported the mean cumulative dose of 25.91 J/cm² NB-UVB at a wavelength of 311nm was given in a mean of duration 5.2 weeks treatment reduced the atopic dermatitis scores from mean 32.2 (range 20.2-45.5) to 14.2 range (6.2-12.4) and concluded that NB-UVB appears to be a promising treatment for atopic dermatitis.

In the current study, vitiligo had complete response in 79.3% of cases (mean session 27.10 ±23.70 and cumulative of Joules 35.18±56.89) which is less than that reported from study done in Malaysia in which repigmentation was moderate in 40% of patients, good response to treatment represented in 20%, while 20% achieved excellent results (9). A study in India showed that the majority of vitiligo cases achieved 75% repigmentation (complete response) (19). Westerhof et al (20) and Scherschun et al (21) achieved up to 75% repigmentation (complete response) in about two thirds of patients, while Tjioe et al (22) reported that repigmentation more than 90% can even be observed.

In this study, patients with psoriasis had complete response with 79.4%, partial 5.9% and no response 14.7%. Our finding was higher than that reported from a study done in China where the total cured was 25.6 % and 4.7% ineffective or no response (23).

Different studies reported that the NB-UVB is more effective than BB-UVB as a monotherapeutic agent in the treatment of psoriasis even in children (24,25,26,27).

According to Syed Shamsuddin et al (10) NB-UVB is safe and effective in the treatment of psoriasis. Psoriasis; twenty-three out of 28 (93.3%) patients were cleared on a mean cumulative dose of 42 J/cm² within 41 sessions over a period of 13.6 weeks.

Conclusion

The findings of this study revealed that NB-UVB is considered the first-line phototherapeutic option for many skin conditions, but large patient series, different dosing schedules and long-term safety considerations should be carefully evaluated in the future, to determine its carcinogenic effects.

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