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Case Study

Knowledge of diabetic patients regarding diabetes management, diet, lifestyle modification and blood glucose monitoring

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Hyperglycemia due to abnormalities in insulin production, insulin action, or both characterizes the metabolic disorders known collectively as diabetes [1]. The many problems that may arise from unchecked diabetes make this disease potentially fatal. Uncontrolled diabetes may be attributed to a number of different things, including low literacy rates, a lack of patient knowledge, attitude, and beliefs; patient behavior in the management of diabetes; non-adherence to medicines; a lack of understanding about conventional treatment standards; a deficiency in diabetes-related education; one's lifestyle; one's family history; one's refusal to limit one's food; and the absence of a specialized person in the management of diabetes. There is a strong correlation between literacy and diabetes awareness [2]. Patients from lower socioeconomic statuses tend to have lower levels of health literacy, which is a significant obstacle in the treatment of chronic conditions like diabetes [3]. When a diabetic patient's health is evaluated early on, serious issues are less likely to develop down the road. The first stage in the patient's education is to help them come to terms with their diagnosis and actively engage in their care, which is essential in the successful management of diabetes. Second, make sure you cover all the bases when talking about diabetes, such as how to control your condition with food, exercise and other methods. Following up with patients on a regular basis, providing them with ongoing education, and giving them the tools they need to manage their own condition is the last stage [4].

Most people in Pakistan learn about diabetes and how to manage it through their doctors, relatives, and friends who have the disease or work in the medical field, the media (print, broadcast, and online), nurses, and other patients sitting in OPD waiting rooms [5]. Doctors' explanations of diabetes care were judged to be insufficient in one research [6]. Educating children and adolescents about diabetes by a multidisciplinary team of nurses, endocrinologists, pediatricians and dietitians was associated with lower HbA1c values [7] in research from Karachi, Pakistan. Diabetic individuals might avoid major consequences by preparing themselves with the correct diabetes education before Ramadan [8].

Sample population

600 patients from the public and 600 patients from the private sector. Out of 1200 respondents, 51.83% (n = 622) were male while 48.17% (n = 578) were female Table 1.

Knowledge and perceptions of patients regarding diabetes management

The correct range of fasting and random blood glucose level for normal and individuals with diabetes were not known by the patients from the public sector in 88.33% (n = 530), 77% (n = 462), 84% (n = 504) and 72% (n = 432) of the cases while in 92.66% (n = 556), 78.33% (n = 470), 83.66% (n = 502) and 75.33% (n = 452) of the cases it was not known by the patients from the private sector, respectively Table 2.

Table 1: Sample population.

Gender	Male	622 (51.83)
	Female	578 (48.17)
Qualification	Primary	178 (14.83)
	Middle	136 (11.33)
	Metric	146 (12.17)
	Intermediate	92 (7.67)
	Graduation	92 (7.67)
	Professional degree	106 (8.83)
	Illiterate	446 (37.1)

Knowledge of prescribers and patients regarding diet, lifestyle modification, and blood glucose monitoring

The correct range of blood glucose level before a meal, blood glucose level after 2hr of meals, blood glucose level at bedtime, carbohydrates, proteins, and fats percentage in diet were known by patients from the public sector in 75% (n = 450), 62.33% (n = 374), 88.33% (n = 530), 55% (n = 330), 48% (n = 288) and 30.33% (n = 182) of the cases while in 64% (n = 384), 61% (n = 366), 89% (n = 534), 52.33% (n = 314), 51% (n = 306) and 35% (n = 210) of the cases in which patients were from the private sector, respectively Table 3.

Mean scores of knowledge of patients and prescribers regarding the management of type 2 diabetes

The mean composite knowledge score regarding the management of type 2 diabetes was: patients from the public sector (36.03 ± 3.75) and from the private sector (36.02 ± 385). A detailed description is given below Table 4.

Result and conclusion

Patient education on the significance of dietary and lifestyle changes was found to be lacking in the present investigation. Possible causes include diabetes educators' and patients' lack of motivation, the patient's inability to follow through on their own learning, and the diabetes educators' use of ineffective counseling strategies. Despite the success of diabetes education, a number of studies have pointed to patients' lack of understanding or poor performance with regard to their treatment plan, complications prevention and control, food, and the management of gestational diabetes [9-12]. Another study's findings emphasized the importance of healthcare professionals' and patients access to diabetes education in the fight against the epidemic of diabetes-related complications [13].

The multidisciplinary health team in Pakistan has

Table 2: Knowledge and perceptions of patients regarding diabetes management.

Indicators	Pt. in Public Sector		Pt. in Private Sector	
	Correct	Incorrect	Correct	Incorrect
	n (%)	*n* (%)	*n* (%)	*n* (%)
Normal				
Fasting blood glucose level is 70-100 mg/dl	70 (11.66)	530 (88.33)	44 (7.33)	556 (92.66)
Random blood glucose level is < 160 mg/dl	138 (23)	462 (77) D FS	130 (21.66)	470 (78.33)
Pre-Diabetes				
Fasting blood glucose level is 110-125 mg/dl	42 (7)	558 (93)	82 (13.66)	518 (86.33)
Random blood glucose level is 120-160 mg/dl	24 (4)	576 (96)	40 (6.66)	560 (93.33)
Diabetes				
Fasting blood glucose level is > 126 mg/dl	96 (16)	504 (84)	98 (16.33)	502 (83.66)
Random blood glucose level is > 250 mg/dl	168 (28)	432 (72)	148 (24.66)	452 (75.33)
Gestational Diabetes				
Fasting blood glucose level is ≥ 92 mg/dl	4 (0.66)	596 (99.3)	8 (1.33)	592 (98.66)
Random blood glucose level is ≥ 150 mg/dl	4 (0.66)	596 (99.3)	8 (1.33)	592 (98.66)

Table 3: Knowledge of prescribers and patients regarding diet, lifestyle modification and blood glucose monitoring.

Indicators	Pt. in Public Sector		Pt. in Private Sector	
	Correct	Incorrect	Correct	Incorrect
	n (%)	*n* (%)	n (%)	*n* (%)
Blood glucose before a meal should be 90 mg/dl - 100 mg/dl	150 (25)	450 (75)	216 (36)	384 (64)
Blood glucose 2 hr. after a meal should be equal to 200 mg/dl	226 (37.66)	374 (62.33)	234 (39)	366 (61)
Blood glucose at bedtime should be < 90 mg/dl	70 (11.66)	530 (88.33)	66 (11)	534 (89)
Blood glucose at 3-4 am should be equal to 140 mg/dl	14 (2.33)	586 (97.66)	28 (4.66)	572 (95.33)
Blood glucose before exercise should be 140 mg/dl	6 (1)	594 (99)	28 (4.66)	572 (95.33)
HbA1c should be 6.5% - 7%	56 (9.33)	544 (90.66)	158 (26.33)	442 (73.66)
Blood pressure should be 130/80 mmHg	228 (38)	372 (62)	206 (34.33)	394 (65.66)
Carbohydrates percentage > 50% - 60% increases BG level	270 (45)	330 (55)	286 (47.66)	314 (52.33)
Protein percentage > 15% - 20% increases BG level	312 (52)	288 (48)	294 (49)	306 (51)
Fats (lipids) percentage > 20% - 30% increases BG level	418 (69.66)	182 (30.33)	390 (65)	210 (35)
Smoking increases blood glucose level	86 (14.33)	514 (85.66)	118 (19.66)	482 (80.33)
Alcohol affects blood glucose level	46 (7.66)	554 (92.33)	52 (8.66)	548 (91.33)

Table 4: Mean scores of knowledge of patients and prescribers regarding the management of type 2 diabetes.

Variables	Correct range of blood glucose levels (8-16) Mean (± S.D)	Diabetes management (12-24) Mean (± S.D)	Composite (20-40) Mean (± S.D)
Gender	Male = 15.08 (± 1.37) Female = 15.23 (± 1.25)	Male = 20.55 (± 2.81) Female = 21.22 (± 2.63)	Male = 35.63 (± 3.74) Female = 36.46 (± 3.62)
Qualification	Primary = 15.57 (± 1.039) Middle = 14.68 (± 1.121) Metric = 14.87 (± 1.417) Intermediate = 14.96 (± 1.26) Graduate = 13.85 (± 1.63) Professional degree = 13.71 (± 1.82) No Education = 15.77 (± 0.70)	Primary = 21.38 (± 2.18) Middle = 20.00 (± 2.45) Metric = 19.70 (± 2.30) Intermediate = 18.85 (± 2.56) Graduate = 18.40 (± 2.01) Professional degree = 17.38 (± 2.54) No Education = 22.90 (± 1.38)	Primary = 36.95 (± 2.88) Middle = 34.67 (± 3.08) Metric = 34.57 (± 3.21) Intermediate = 33.82 (± 3.36) Graduate = 32.25 (± 2.95) Professional degree = 31.09 (± 3.84) No Education = 38.68 (± 1.79)
Duration of Diabetes	< 1 year = 15.16 (± 1.35) 1-5 years = 15.09 (± 1.13)	< 1 year = 20.99 (± 2.76) 1-5 years = 20.12 (± 2.58)	< 1 year = 36.16 (± 3.73) 1-5 years = 35.21 (± 3.47)
Sector	Public = 15.15 (± 1.19) Private = 15.15 (± 1.43)	Public = 20.87 (± 2.73) Private = 20.86 (± 2.78)	Public = 36.03 (± 3.57) Private = 36.02 (± 3.85)

significant difficulty in developing and implementing effective diabetes education activities. Educators for people with diabetes lack proper training. Pakistan's diabetes education program lacks central oversight from planners and evaluators. It's important to remember, however, that this initiative is still relatively new in Pakistan, so it stands to reason that there would be teething issues with patient education. Therefore, the chance to overcome numerous gaps in patient education may be found in attentive supervision, as well as frequent and continuing training programs for prescribers.

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