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Assesment of diabetes related quality of life and the impact of pharmaceutical care in its improvement

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ABSTRACT

Objective: To assess the role of pharmaceutical care in improving quality of life in type II diabetes mellitus patients in a tertiary care hospital.**Methods:** A prospective observational survey study was carried out for a period of 9 months in the General Medicine Department of the hospital. A total of 106 patients were enrolled and were randomly allocated to the control and intervention groups with 53 patients in each group. Version-19 of audit on diabetes-dependent quality of life questionnaire were provided to the patients, at the time of admission and during review. At the time of admission the intervention group was provided with counseling for diabetes and with patient information leaflets on the disease. A data entry format comprising the socio-demographic details of the patients, their medical and medication history, laboratory results, etc. were used to note down the patient details. The prescribing patterns of different oral hypoglycemic agents were noted.**Results:** A total of 106 patients were recruited, 51% being male. Age ranged from 32 to 80 years with a mean age of 60.210 ± 10.045 . The duration since diagnosis was 5–10 years for most of the participants (67%), 10–20 years for 29% and > 20 years for the remaining. At the time of study, 17.9% of participants were received insulin treatment, and 82.1% on oral hypoglycemic agent. The average weighted impact of intervention group which improved from -1.7526 ± 0.5630 to -1.668800 ± 0.048013 was found to be statistically significant. Thus the study showed that pharmaceutical care has a positive impact on the quality of life of diabetes patients.**Conclusions:** Quality of life is worsened in diabetes mellitus patients, particularly for the 'freedom to eat' domain, indicating that an intervention to improve dietary freedom might be a good way of improving quality of life. The study also showed that patient counseling played an important role in improving quality of life of diabetes patients.

1. Introduction

Diabetes mellitus (DM) overtime becomes one of the most expensive diseases because of the tremendous financial burden it places in the patients as well as healthcare system[1]. The worldwide prevalence of DM has risen over the last 20 years, from an estimated 30 million cases in 1985 to 177 million in 2000[2]. The total number of people with diabetes is expected to rise from 177 million in 2000 to 366 million in 2030. By 2030 India, China and USA will

become the countries with the largest number of diabetic people in decreasing order[3,4]. Once diabetes is diagnosed, the therapy becomes essential. In order for the therapy to be fully effective, patient education also plays a role[5]. Best diabetes care can only be provided by a team of expert health professionals, working in collaboration with the patient and family[6].

Quality of life is a term which refers to an overall sense of wellbeing. Health related quality of life purely measures the health and functional status of the individual[7]. Health related quality of life takes into account physical, psychological and social aspects of the life of diabetic patients and hence has gained considerable importance as patient reported outcome in healthcare system during the past twenty years[8]. The audit on diabetes-dependent quality of life is an individualized tool used to measure the individual's feelings about the impact of diabetes. It includes life domains that may be affected by diabetes[9,10].

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As the prevalence of diabetes is increasing day by day it is no longer satisfactory to provide diabetic patients with brief instructions and a few pamphlets and expecting them to manage their disease adequately[11]. Proper active education should be given to the patients by the healthcare team involving the physician, nutritionist, diabetes educator, and other health professionals[12]. Diabetes education cannot be accomplished in 1 or 2 encounters and must be a lifetime exercise. Pharmaceutical care provides the direct and responsible medication-related care aimed at achieving definite outcomes to improve the patient's quality of life[13]. Chronic complications of diabetes affect the quality of life of diabetic patients. Different factors like patients' perception about their disease, socioeconomic factors, diet regulation, self monitoring of blood glucose, *etc.* are known to improve the quality of life of these patients[14,15]. Thus pharmaceutical care can help improve the quality of life of patients with DM through bedside care[16].

2. Materials and methods

A prospective observational survey study was carried out for a period of 9 months (November 2013–August 2014) in the General Medicine Department of a tertiary care hospital. Adult (> 18 years old) men and women with type II DM with at least five years of duration since diagnosis. Patients who give consent to participate in this study were included in the study. Patients with type I DM, gestational DM, and unwilling or unable to give consent to participate in this study, and patients with significant cognitive impairment were excluded from the study.

A total of 125 patients were interviewed during the study period. Out of which 106 patients met the inclusion criteria were included in this study. The participants were randomly divided into control and intervention groups. The study used version-19 of audit on diabetes-dependent quality of life questionnaire to assess the quality of life of type II DM patients. Audit on diabetes-dependent quality of life-19 questionnaire were provided to the patients, at the time of admission and during review. At the time of admission the intervention group was provided with pharmaceutical care through diabetes education, medication counseling, suggestions on lifestyle that needed modifications (necessary for suitable drug function) and dietary guidance with respect to their prescribed drugs and they were given patient information leaflets on the disease, whereas the control group patients were deprived of any pharmaceutical care till the end of the study.

The copyright of the questionnaire is owned by Prof. Clare Bradley and the license to use the questionnaire was granted by Health Psychology Research Ltd., University of London on 17th January 2014. Approval for this study was given by the Institutional Ethics Committee of the hospital.

All statistical analyses were performed with SPSS for Windows, version 19.0 and Microsoft Excel 2010. For descriptive statistics, mean \pm SD and frequencies were calculated. The *t*-test was used for the comparison of mean score values between groups. $P < 0.01$ were considered statistically significant.

3. Results

A total of 106 patients were selected, 51% being male. The control

group comprised of 26 males and 27 females and the intervention group comprised of 25 males and 28 females. Age ranged from 32 to 80 years with a mean age of 60.21 ± 10.045 and a median age of 61 years. The respondents were divided into 5 groups based on their age. Majority of the respondents were within the age group 61–70 years ($n = 37$), followed by 51–60 years ($n = 31$), 71–80 years ($n = 19$), 41–50 years ($n = 17$). Only 2 respondents were under the age group of 40 years. Twenty-two and fifteen patients respectively from the intervention and control group lied within 61–70 years of age. The duration since diagnosis was 5–23 years for control group with an average duration of (10.19 ± 4.59) years. The duration since diagnosis was 5–21 years for intervention group with an average duration of (9.94 ± 4.01) years. The duration since diagnosis was 5–10 years for most of the participants ($n = 71$), 10–20 years for 31 participants and > 20 years for the remaining ($n = 4$).

3.1. Baseline interview results

During the baseline interview the quality of life of the patients was assessed using audit on diabetes-dependent quality of life questionnaire prior to any counseling. The unweighted impacts of diabetes on individual domains before providing pharmaceutical care were calculated. The highest unweighted negative impact of diabetes was found to be on the domain “freedom to eat” ($C = -2.40$, $I = -2.42$), followed by “freedom to drink” ($C = -2.09$, $I = -2.15$) and “physical activity” ($C = -1.62$, $I = -2.06$). The least impact of diabetes was on “peoples' reaction” ($C = -0.02$, $I = -0.01$).

The weighted impacts of diabetes on different domains of life were calculated. The domain “freedom to eat” ($C = -4.28$, $I = -4.83$) showed the highest negative weighted impact. The domains “employment” ($C = 2.72$, $I = 2.74$), “family life” ($C = 2.64$, $I = 2.70$) and “personal relationships” ($C = 2.47$, $I = 2.30$) were reported as the most important items and “physical appearance” ($C = 0.74$, $I = 0.53$) as the least important item.

3.2. Final interview results

The unweighted impacts of diabetes on different domains of life after pharmaceutical care provided were calculated. Thus during the final interview the highest unweighted negative impact of diabetes was found to be on the domain “freedom to eat” ($C = -2.32$, $I = -2.26$), followed by “freedom to drink” ($C = -2.04$, $I = -1.94$) and “physical activity” ($C = -2.62$, $I = -1.92$). The least impact of diabetes was on “peoples' reaction” ($C = -0.02$, $I = -0.01$).

The weighted impacts of diabetes on different domains of life after pharmaceutical care provided were calculated. The domain “freedom to eat” ($C = -4.28$, $I = -4.83$) showed the highest negative weighted impact. It showed that obesity was an important contributing factor to the development of DM. The domains “employment” ($C = 2.70$, $I = 2.74$), “family life” ($C = 2.64$, $I = 2.70$) and “personal relationships” ($C = 2.47$, $I = 2.30$) were reported as the most important items and “physical appearance” ($C = 0.74$, $I = 0.53$) as the least important item.

The mean impact of diabetes on quality of life of the patients was found to be -1.530 ± 0.749 for the control group and -1.600 ± 0.689 for the intervention group. The average weighted impact (AWI) score during baseline interview was found to be -1.7453 ± 0.5530 and

-1.7526 ± 0.5630 for the control and intervention group respectively. During the final interview the AWI scores were found to be 1.71910 ± 0.51617 and -1.668800 ± 0.048013 respectively for the control and intervention groups. During final interview a variation in AWI scores for two groups was observed.

4. Discussion

The highest unweighted negative impact of diabetes was found to be on the domain “freedom to eat” followed by “freedom to drink” (C = -2.09, I = -2.15) and “physical activity”. The least impact of diabetes was on “peoples’ reaction”. It was encouraging that subjects with DM did not think that they would be very affected by ‘people’s reaction’, as a high level of self-esteem is associated with better adherence to therapy and better treatment outcomes. The domain “freedom to eat” showed the highest negative weighted impact, showing that it was not dramatically enhanced by the importance rating. Given that obesity is an important contributing factor to the development of DM, it was not surprising that the domain “freedom to eat” had the maximum negative unweighted impact score as well as the maximum weighted impact score. The domains “employment”, “family life” and “personal relationships” were reported as the most important items and “physical appearance” as the least important item.

All domains had a negative mean value indicating that diabetes had a negative impact on all the different domains of life. The domains “working life”, “sex life”, and “holidays” showed some missing responses. No change was observed in the ranking of impact and importance rating of different domains before and after providing pharmaceutical care. But after the pharmaceutical care was provided a variation in AWI scores for two groups were observed during the final interview. Paired *t*-test was carried out to assess the significance of the difference between means. Calculated *t* value was greater than the table value for *t* at 0.01 level of significance. Hence the null hypothesis was rejected and the research hypothesis was accepted. Thus the research hypothesised that pharmaceutical care has a significant impact on improving the quality of life among type II diabetic patients was accepted.

The study showed that diabetes has a negative impact on ‘the freedom to eat’ domain resulting in impairment of the quality of life of the patients. This can be improved by focusing on providing them with dietary freedom. The study also showed that patient counseling played an important role in improving the quality of life of patients with DM. Future research on diabetes should include measures of quality of life since assessing patients’ quality of life has numerous benefits. It is highly beneficial to assess patients quality of life as it helps to evaluate the factors that have maximum impact on patients’ quality of life. The impact of altered quality of life in patients with DM may affect the patients and healthcare providers in aspects such as compliance and decision making respectively. Therefore it is beneficial to understand the quality of life of patients with DM so as to provide future patients with clear picture about the impact of treatment on their quality of life.

Conflict of interest statement

We declare that we have no conflict of interest.

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