

Impact of Communication on Self Care Management among Individuals with Diabetes Mellitus in an Urban Community in Mumbai

Mangalam Sriram¹, Prakash Doke², Prabha Dasila³

¹Director Academics, CIHEH, Majiwada, Thane

²Professor, Dept of Community Medicine, BVDU Medical College, Pune

³Principal and Director, MGMIHS, Kamothe, Navi Mumbai

Corresponding Author: Mangalam Sriram

ABSTRACT

Background: Diabetes Mellitus is a major life style disease characterized by elevated level of blood glucose mainly due to absolute or relative deficiency of Insulin hormone. It leads over time to serious damage to the vital organs. Management of Diabetes involves collaborative care and self management education. Self management education in addition to traditional patient education in helps the individual to live the best possible quality of life with their chronic condition.

Aim: To assess the impact of communication on self care management among individuals With Type 2 Diabetes in an urban community.

Material and Methods: This interventional study was carried out in the selected urban slums of Mumbai City. Door to door survey was conducted to identify individuals with history of Diabetes. As per the inclusion criteria they were selected through multistage sampling technique. A total of 419 individuals were included in two different groups. There were 212 participants in Group I – Verbal Communication group and 207 participants in Group II – Written Communication group. Structured questionnaire was used to collect personal and clinical information from the participants. Structure teaching material on Self Care Management on diabetes were used for teaching keeping the content same for both groups. Group I – Lecture and discussion method, Group II – Booklet method. Chi², t test and ANOVA were used for analysis.

Results: Age, gender, Socio Economic Status and BMI are some of the factors which influence the propensity of acquiring Diabetes. Majority of participants had average knowledge on self care of diabetes in both the groups. There was gain in knowledge and self-care practices of Diabetes in both groups following intervention but the gain was better in Group I as compared to Group II(p<0.05).

Conclusion: Verbal communication method is better than written communication method in teaching Patients on self care management of Diabetes.

Keywords: Diabetes Mellitus, Communication, Knowledge, Self care management

INTRODUCTION

Diabetes Mellitus is a major life style disease. It is characterized by disturbances in carbohydrate, fat and protein metabolism, leading to hyperglycemia. Diabetes is believed to be a major public health problem around the globe. The disease is one of the most serious public health challenges of the present century. In 2011, there were 366 million people with

diabetes globally and this is expected to rise to 552 million by 2030. According to WHO report there will be an estimated 42% rise in the prevalence, rising from 51 million to 72 million in the developed countries and 170% rise, from 84 million to 228 million in the developing countries. By the year 2030 the countries with the largest number of diabetes people would be in India, China and United States.

The ICMR – INDIAB national study reported that there are 62.4 million people with type 2 diabetes and 77 million people with pre diabetes in India¹. India was home to 61.3 million patients with Diabetes Mellitus in 2011. This number is expected to increase to 101 million by the year 2030. The reasons for increase in the prevalence of Diabetes Mellitus are due to population growth, aging, urbanization and increased physical inactivity causing obesity. A study by Gulabani² shows that increasing patients' knowledge regarding the disease and its complications has significant benefits with regards to patient compliance to treatment and to decreasing complications associated with the disease.

A growing need has been felt by the health professionals and consumers. It advocates that comprehensive information in a format the patient can understand, needs to be provided to manage diabetes care at home. Many studies³ have demonstrated that providing written information to patients on discharge or at the clinic is an important strategy which may help the patients and care-givers to manage treatment and seek appropriate information when needed, relating to follow-up care. It improves satisfaction of patients with respect to the treatment provided, decrease stress and anxiety, improves adherence to hospital aftercare regimes and reduces readmission to hospitals. A review study³ on written and verbal information versus verbal information only for patients being discharged from acute hospital setting to home, reported that knowledge relating to treatment and after care procedures improved in wide range of areas among parents of children. When written health information was provided along with verbal information as compared to verbal information only, the satisfaction level too improved among patients and care givers.

In India, to increase awareness about diabetes and its complications, direct public education and campaigns are required. There is a need to spread the message that diabetes is preventable and a behavioral

change is needed to adopt a healthy lifestyle. Community based health programs can be implemented to reach these objectives.

For motivating and coaching patients with diabetes, require a good relationship with patients, a nonjudgmental attitude, good communication skill, compassion and easy accessibility for patients. The health information provider should also be adequately knowledgeable about diabetes treatments and self care management. Nurses work in a variety of health care settings, not just hospitals. While nurses in the hospital may focus more on the patient's recovery from illnesses, community nurses focus more on prevention of diabetes. The responsibility of educating patients on self care often falls on the nurses who maintain a good relationship with people in the community. The challenge of educating the diabetic patients can be addressed by nurses who are trained in diabetes management. This will help in meeting the growing need of educating and monitoring diabetes patients and will provide any kind of support that the patients need. Various approaches can be used to teach the patients about self care. This study aims to determine the difference in effectiveness of verbal and written communication methods which are commonly used for educating people at the community settings.

Aim

- To evaluate the impact of Communication on Self Care Management among Individuals with Diabetes Mellitus in an urban community in Mumbai

Objectives

1. To assess the existing knowledge and practices in relation to self care management of Diabetes Mellitus
2. To compare the effectiveness of verbal and written communication on knowledge and practice of self-care among individuals with Diabetes Mellitus
3. To find the association of knowledge and practice (both pre and post-test)

with selected variables i.e.- age, gender, Occupation, duration of illness, BMI, Socio economic class.

MATERIAL AND METHODS

A quasi experimental design was adopted in order to evaluate the impact of the communication method used for educating individuals with Diabetes Mellitus on self care management.

Mumbai is the second most populous metropolitan city with a population of 22.05 million as of 2018. The population density is estimated to be about 20482 persons per sq. km. The living space is 4.5 sq. mt. per person. It is home to 20748395 people in 2011. The number of slum dwellers is estimated to be 9 million that is 62% of the Mumbaikers live in informal slums⁴.

The study was conducted in selected urban community of Mumbai city. Multistage sampling technique steps used in this study is as follows-

- Mumbai city is divided into 6 zones for administrative purpose by Municipal Corporation of Greater Mumbai⁵.
- Each zone is divided into wards with total of 24 wards.
- Three zones were selected randomly and from each of the selected zone one ward was selected.
- From each ward, one health post was selected randomly by lottery method.
- From each selected health post, one urban slum area selected randomly
- Each health post covers a defined population living in the slum community, chawls, redeveloped building, cooperative society or high rise buildings. The population from slum were selected as per set criteria
- In the present study, probability sampling technique was used to select the sample. Individuals with diabetes were identified by house to house survey till the investigator found a person with diabetes who met the inclusion criteria. Using Simple random sampling technique 75 persons were selected in

verbal communication group from the area. Similarly, as per the inclusion criteria, 75 persons were selected from different section from the same slum area for the written communication group. The knowledge and practice of self care management of Diabetes for written communication group was also assessed by interview schedule followed by distribution of the booklet in the language of their understanding (English, Hindi or Marathi). Thus 150 samples were selected from each urban slum area.

- Care was taken to keep the verbal communication group separate from the written communication group in each area.
- The same pattern of data collection was followed in the other areas as well. A total of 450 participants, from all the three slums are chosen for the study considering the dropouts by the end of data collection. By the end of data collection there were 31 dropouts reducing the sample size to 419.
- The effect of intervention was assessed for both the communication groups after one month, three months and six months following the intervention of structured teaching programme/ distribution of booklet

Validity of the questionnaire and interventional tool was established by tool validation committee. Reliability of the tool was established by test retest method. Pilot study was conducted to calculate the sample size and the feasibility of the tool for actual study.

Data collection process

Data were collected between February 2017 and November 2017. Prior permission was obtained from the concerned authority. Keeping in mind the ethical aspects of research, the data were collected by face to face interview after obtaining consent from the participants. Individuals with diabetes were identified by house to house survey till the investigator found a person with diabetes who met the

inclusion criteria. Using purposive sampling 75 persons were selected in verbal communication group from the area. The Blood Pressure, Height and Weight of the participant was checked. The baseline knowledge was assessed by using an interview schedule in 35 – 40 minutes for each individual. After collecting data of 6-8 individuals, they were grouped for planned teaching using flash cards in two sessions of 45 min to 1 hour each over 2 days. The content of the flash cards were same as that in the booklet. The first session included discussions on magnitude of the disease, the meaning, risk factors, signs and symptoms, investigations and diet. Second session included exercise, medication, monitoring, hygiene, foot care, follow up, early detection of complication and its management and travel tips was collected using the interview schedule.

Similarly, as per the inclusion criteria, 75 persons were selected from different section from the same slum area for the written communication group. The Blood Pressure, Height and Weight of the participant were checked. The knowledge and practice of self care management of Diabetes for written communication group was also assessed by interview schedule followed by distribution of the booklet in the language of their understanding (English, Hindi or Marathi).

Care was taken to select the participants for both groups from entirely different geographical section of the area. About 15 to 18 individuals were interviewed each day.

Series of assessment at 1 month, 3 months and 6 months following pre test was conducted for all the participants using the same interview schedule to evaluate the effect of interventional tool. There were drop outs in the study due to migration or visiting to village. The total participants in each area were 75 at the beginning of the data collection, with a total of 450 participants. By end of the data collection the total participants reduced to 419.

Collected data was analyzed using descriptive and inferential statistics and presented in form of tables and graphs. Paired t test was used to find out the impact of interventional tool. ANOVA test was used to find out the impact of intervention within and between the verbal and written communication groups. Chi² was used to find out association between knowledge and self care practices with selected demographic variables.

RESULT AND DISCUSSION

Demographic data

Majority of participants in Group I (35.4%) and Group II (34.3%) belonged to the age group of 51 to 60 years. This was similar to the study⁶ conducted at Gujarat where the average ages of the participants were 50-59 years (40.33%). The INDIA DIABetes (ICMR-INDIAB) study⁷ on prevalence of diabetes in urban and rural India showed a mean age of 40 ± 14 years. Diabetes Mellitus in the elderly could be related to reduced exercises, loss of muscle mass and weight gain with aging.

Majority of participants in both the groups were females – Group I (59.9%) and Group II (54.1%). Global study⁸ on prevalence of diabetes showed similar prevalence in men and women but found the prevalence higher in men less than 60 years and in older women. The higher number of women in the group is consistent with the findings of other study⁹ despite the fact that Diabetes Mellitus is more prevalent in men. Higher prevalence of diabetes was seen in women (44.2%) as compared to men (41.2%) in age group 40 to 60 years¹⁰. Higher prevalence was reported in females as most of them were housewives. Higher prevalence of Diabetes in females may be related to the dramatic changes in the hormones and body due to reproductive factors during their lifetime.

Majority of the participants were married in both the groups – Group I (99%) and Group II (97%). The inclusion criteria for study were adults above 18yrs of age,

naturally most of the participants were married.

Both the groups majority of participants were educated up to high school or above Group I (44.3%) Group II (61.3%). A study conducted at Allahabad proved that there was a significant difference ($p < 0.001$) when knowledge of illiterate patients was compared to literate patients on knowledge regarding self care⁹. Knowledge regarding Diabetes is influenced by educational status as both the group participants showed improved knowledge after the intervention.

Majority of the participants in both the Groups were unemployed as they were from more than 50 years age group. Study¹⁰ in India showed that maximum prevalence of diabetes was found among the unemployed and retired subjects.

Majority of the participants from both groups belonged to nuclear family probably due to the current social trend. Family members play an important role in management of Diabetes, so involving them in self care intervention may have a positive influence in diabetes management outcome. A study¹¹ on family based intervention found improvement in Hb1Ac in short period along with improvement in other parameters like Blood pressure, maintenance of weight and cholesterol level. A follow up beyond 1 year found that these levels were not maintained. No studies on specific type of family were found.

Monthly family incomes of majority of the participants in both the groups were more than Rs. 10680 per month. A rising trend in the prevalence of diabetes was observed with increase in family income¹⁰. The reasons being that the family could employ a maid for carrying out the routine household work and the females exercised less as compared to the males. In another study¹² majority of participants belonged to lower middle income group. This higher rate was reported due to urban residency, low physical activity levels, unhealthy diet, tobacco consumption or family history of diabetes¹². Increased family income influences the life style of the family

members thus increasing the risk for life style diseases.

Clinical information

Majority of the participants from both the groups were having BMI above 23 kg/m². This study reveals that people who are overweight are at greater risk for Diabetes. The National Urban Diabetes Survey¹⁰ conducted in India showed that Diabetes have a positive association with BMI.

Majority of participants in both the groups were suffering from diabetes for last 5-10 years. A study¹³ on self care practices among Diabetics also reported the mean duration of diabetes in the participants as 8.75 years (7.18-10.31). The new cases are detected early as there is increased awareness among the people and due to availability of Diabetes screening facility in the community.

More than half, 76.4% in Group I and 71.5% in Group II were affected by diabetes between the age of 40 to 60 years. The national urban diabetes survey¹⁴ in India showed that more than 50% of diabetic cases had onset below the age of 50 years. The onset of diabetes occurring below 50 years implies that these subjects developed diabetes in the most productive years of life and had greater chances of developing the chronic complications of diabetes.

All the participants in both groups were taking allopathic treatment from the physicians as there are adequate physicians available in the urban areas. Study¹³ on Diabetics in Anand district showed that only 1% of the participant consulted endocrinologist, 94% consulted general physician where as 5% consulted other therapy doctors for treatment. So the people have awareness regarding importance of treatment and consult the physician for the same.

Very few participants from both the groups suffer from hypertension, poor vision, leg pain and skin problems, as most of the participants in both groups reported having diabetes for less than 10 years. The

risk for complications occurs after 10 to 20 years after onset of disease. Many studies^{13,7} have reported the differences in patterns of complications seen in Asian Indians. In Indians, the duo of hypertension and Ischemic Heart Disease was reported to be co existing more frequently than other combinations. The prevalence of retinopathy, nephropathy and peripheral vascular disease appear to be lower while that of neuropathy appears to be similar to the values, reported in western countries^{13,7}. A study in south India¹⁵ reported that 24.6% of the participants had Neuropathy, followed by 23.6% with cardiovascular complications.

Majority of participants from both the groups had blood sugar level recorded above normal, at end of this study, in spite of receiving adequate treatment. Though the blood sugar levels were above normal they were low as compared to the recording measured at the beginning of the study. This reveals the need for periodic self care management education for the participants.

Knowledge of the group before intervention

In Group I, 45.3% of the participants had average knowledge, 33% had good knowledge and 3.3% had excellent knowledge on diabetes. Group II participants also showed similar knowledge level, average 47.3%, good 33.3% and excellent 4.3%. This shows that the intervention of communication on self care management of diabetes was effective in improving knowledge of diabetes by both methods: verbal and written method in form of booklet. Similar findings were reported in the study¹⁶ where 96% of the patients had unsatisfactory knowledge which improved after teaching program. A study¹⁸ on role of Diabetes Educator in management of Diabetes showed that 38.9% of participants were aware about the food items to be avoided. The knowledge of foot care was high in both the groups followed by disease, exercise, medication, complications and diet. Deepa Mohan et al¹⁷ in Chennai observed that even among the self reported

diabetics, knowledge about diabetes including awareness of complications of diabetes was poor. This indicates most of the patients have not been taught about diabetes by the health care professional.

Practice of self care management of diabetes

Participants of both the groups had similar self care practice scores. In Group I, 21.7% had average score, 57.5% good score and 13.2% had excellent score while in Group II 22.7% had average, 58.9% had good and 12.1% had excellent self care practice score. There was good improvement in the practice score at one month post intervention, the improvement being better in Group I than Group II. These values shows that the self care practices improved at one month post intervention in both groups but was not maintained at 3 months and 6 months. So the need for reinforcement of self care practices regularly by health care professional is felt. The practice score was high in medication followed by Hygiene, exercise, monitoring, foot care and diet. Study¹⁷ on evaluation of Diabetes self care revealed that more than 50% of the patients who had training could not demonstrate adequate knowledge or skills in any of the major areas of self care. A study¹⁹ in Canada showed that those participants who received individual counseling with group education showed greater improvement as compared to individual education in regards to nutrition adherence at one month, but no significant difference was found at three months.

Pre and post intervention knowledge score.

In Group I majority of participant's knowledge score was average (45.3%) at pre intervention. At one month post intervention 60.9% had good score, which was maintained at 3 months (69.8%) and 6 months(61.3%).

In Group II also showed similar pattern of knowledge score grading. Majority of participant's knowledge score was average (47.3%) at pre intervention. At one month post intervention 64.8% had

good score, which was maintained at 3 months (62.8%) and 6 months(61.4%).

The mean pre intervention knowledge score in Group I was 19.25 and the mean post intervention score at 1 month was 25.91, at 3 months – 23.11 and at 6 months 22.33. The mean pre intervention knowledge score in Group II was 19.83 and the mean post intervention score at 1 month was 25.31, at 3 months – 22.89 and at 6 months 22.58. This shows that the intervention of communication on self care management of diabetes was effective in improving knowledge of diabetes by both methods – verbal and written method in form of booklet. This improvement in knowledge is in line with the theory of Hermann Ebbinghaus where there is decrease in the ability to recall what is learnt after a couple of days. Here the memory improved in both groups at one month but with time the ability to recall started falling steadily.

Pre and post intervention Self care practice score

In Group I majority of participant's self care practice score was good (57.5%) at pre intervention. At one month post intervention 40.6% had excellent score, which decreased at 3 months (28.8%) and 6 months(12.7%).

In Group II also showed similar pattern of knowledge score grading. majority of participant's self care practice score was good (58.9%) at pre intervention. At one month post intervention 25.6% had excellent score, which decreased at 3 months (20.3%) and 6 months(9.7%).

The mean pre intervention self care practice score in Group I was 39.64 and the mean post intervention score at 1 month was 45.84, at 3 months – 44.14 and at 6 months 41.41. The mean pre intervention self care practice score in Group II was 39.74 and the mean post intervention score at 1 month was 44.30, at 3 months – 42.80 and at 6 months 40.26. The above values shows that the self care practices improved at one month post intervention in both groups but was not maintained at 3 months and 6 months. So

the need to reinforce the self care practices regularly by health care professional is felt.

Domain wise significance between the groups for various knowledge factors

There was no significant association between the two modes of communication at pre intervention regarding knowledge of disease ($P = 0.604$) but were significant at 1 month ($P = 0.003$), 3 months ($P = 0.006$) and at 6 months ($p = 0.023$). Between both the groups the knowledge about the disease were similar at pre intervention level, however the verbal group showed improvement in knowledge regarding disease at 1 month, 3 months and 6 months post intervention.

There was no significant difference in knowledge regarding diet between the groups at 1 month ($P = 0.701$) post intervention, but showed significant difference at 3 months ($P = 0.014$) and at 6 months ($P = 0.004$) post intervention. There was no association between the two modes of communication for knowledge on medication as all values were $P > 0.05$ (Pre intervention = $P = 0.715$, at 1 month – 0.591, at 3 months 0.509 and at 6 months $P = 0.709$). An interventional study using teach back and pictorial image strategy showed better adherence to medication and dietary recommendations in intervention group as compared to control group. The pictograms were found to contribute in improving the understanding and adherence to medication¹⁸.

No association were noted between the two modes of communication for knowledge regarding exercise at pre intervention ($P = 0.706$) at 1 month ($P=0.663$) and at 3 months ($P = 0.098$). There was significance difference observed at 6 months post intervention ($p=0.043$). There was no association between the modes of communication for knowledge on foot care at pre intervention ($P = 0.448$), 3 months ($P = 0.119$) and 6 months ($P = 0.364$) post intervention. Knowledge related to foot care was significant at 1 month post intervention ($P= 0.042$). The findings were similar to a study²⁰ on effectiveness of foot

care education on knowledge in diabetes patients in south India which showed a significant gain in knowledge after one month of intervention in aspect of foot care and foot risk assessment.

There was no association between the two modes of communication for knowledge on complications of Diabetes as the significance values were > 0.05 at all times. (Pre intervention $P = 0.287$, 1 month $P = 0.890$, 3 months $P = 0.755$, 6 months $P = 0.397$).

The above results show that reinforcement of knowledge in domains of adherence to medication, regularity in exercise, foot care and complications related to diabetes is required periodically at every follow up.

Domain wise significance between the groups for various self care practice factors

There was significant association observed in relation to dietary practices between the two modes of communication at all levels, at pre intervention ($P = 0.025$), post intervention 1 month ($P = 0.015$), 3 months ($P = 0.011$) and 6 months ($P = 0.016$). The dietary practices followed by group I were better as compared to group II. In self care practice related to medication showed no association between the two modes of communication at all levels, Pre intervention ($P = 0.303$), post intervention 1 month ($P = 0.146$), 3 months ($P = 0.533$) and at 6 months ($P = 0.574$). In self care practice related to exercises no association was found between the two modes of communication at all levels pre intervention ($P = 0.278$), post intervention at 1 month ($P = 0.389$), 3 months ($P = 0.272$) and 6 months ($P = 0.421$).

In self care practice related to foot care no association was found between the two modes of communication at pre intervention level $P = 0.218$. The association related to foot care practices in the groups were found significant post intervention at 1 month ($P = 0.009$), 3 months ($P = 0.008$) and 6 months ($P = 0.009$). In self care monitoring of diabetes no association between the two modes of communication were seen at all

levels i.e. pre intervention ($P = 0.570$) and post intervention at 1 month ($P = 0.149$), at 3 months ($P = 0.346$) and 6 months ($P = 0.453$). The above findings indicate that reinforcement is required periodically in domains of self care practice in medication, exercises, monitoring of diabetes and personal hygiene.

Overall improvement in mean score of knowledge and self care management practices were observed at 1 month. Though the values declined at 3 months and 6 months, the scores were higher than the pre intervention score.

Difference in the knowledge from pre intervention to post intervention at 1 month, 3 months and 6 months

In both the groups, there is an improvement in the knowledge scores from Pre intervention to 1st month follow up and the improvement is statistically significant. ($p < 0.05$). The pre intervention knowledge mean score in Group I was 19.25, increased to 25.91 at 1 month post intervention, which is statistically significant improvement. For Group II the mean score was 19.83 increased to 25.31 at 1 month post intervention.

At 3 months Post intervention the improvement in knowledge was significant ($p < 0.05$). The Pre intervention mean knowledge of Group I increased from 19.25 to 23.11 and in Group II it increased from 19.83 to 22.89.

At 6 months of Post intervention the improvement in knowledge was significant ($p < 0.05$). The Pre intervention mean knowledge of Group I increased from 19.25 to 22.33 and in Group II it increased from 19.83 to 22.54.

Findings related to gain in knowledge regarding diabetes self care management between the Group I and Group II using ANOVA test reveals that there is no significant difference in gain in knowledge between the groups as the calculated F values ($p > 0.05$) are less than the table F value at all times – Pre intervention, 1 month, 3 months and 6 months.

Difference in self care practice from pre intervention to post intervention at 1 month, 3 months and 6 months

Significant improvement in self care practices of both groups were observed after intervention. The improvements were statistically significant ($p < 0.05$). At 1 month of intervention the mean self practice score in Group I increased from 39.65 to 45.84 and Group II 39.74 to 44.30.

At 3 months of intervention the mean self practice score in group I increased from 39.65 to 44.14 and Group II increased from 39.74 to 44.30.

At 6 months of intervention the mean self practice score in Group I increased from 39.65 to 41.41 and Group II increased from 39.74 to 40.26.

Findings related to gain in self care management regarding diabetes between the Group I and Group II using ANOVA test reveals that only at 1 month and at 3 months there is a statistically significant difference in practice between Group I and Group II ($p < 0.05$). At pre intervention and at 6 months no significant difference seen in Self care practice score in both groups ($p > 0.05$).

Association of Selected Variables

The association between the demographic variables and the pre intervention knowledge scores are depicted in the table 27 showed significant co relations between age, type of family and socio economic status with the pre intervention knowledge score ($p < 0.05$). Other variables had no significant co relation with the pre intervention knowledge score.

There was a significant co relation between age and socio economic status with the post intervention knowledge score ($p < 0.05$). Other variables had no significant co relation with the post intervention knowledge score.

There was a significant co relation between age and type of family with the pre intervention self care practice score ($p < 0.05$). Other variables had no significant co relation with the pre intervention self care practice score.

There was a significant co relation between age, marital status and type of family with the post intervention self care practice score ($p < 0.05$). Other variables had no significant co relation with the pre intervention self care practice score.

The cost incurred for preparing flashcards for verbal method of communication is Rs. 600/-. For written method of communication, the cost incurred for printing 450 booklet in three languages @ Rs. 45/- each, costed Rs. 20250/- . Considering the current population of Mumbai at 22.05 million in 2018, the cost would be very high and not feasible. Focusing on the increasing number of people getting diagnosed for Diabetes in our country, education through verbal method is recommended as it involves low budget and can cover a large population at a time.

CONCLUSION

This study demonstrates that both methods of teaching – verbal and written in form of booklet, may contribute to improve the knowledge and practices in self care management of diabetes. The mean pre knowledge score related to diabetes management was 19.54 which improved to 25.61 at 1 month of intervention, At 3 months of intervention the mean knowledge score was 23.00 and at 6 months it was 22.43. Though there was decrease in the mean score after 1 month of intervention the scores were found to be better than the pre intervention mean score at 6 months. Similarly the self care practice mean scores at pre intervention was 39.69 which improved to 45.08 at 1 month post intervention. At 3 months post intervention the mean score was 43.48 and at 6 months it was 40.84. Though there was decrease in the mean score after 1 month of intervention the scores were found to be better than the pre intervention mean score at 6 months. So it is recommended that the education on self care management be given periodically at least once in 6 months by the health care personnel to reinforce the knowledge in the diabetic persons.

The findings of this study conclude that verbal method of communicating has more effect than the written method of communication in educating the patients in self care management of diabetes. Though verbal method is time consuming, it is cheaper as compared to booklet and cost effective for Indian scenario. Training of diabetes educators in improved health communication skills may help to improve the understanding and self care management practice of diabetes patients. The booklet used in this study or similar pictorial literature focusing diabetes management may be used along with other methods of communication to counsel patients periodically.

The deficiencies identified in knowledge and self care practices suggest to integrate diabetes education programs in routine clinical practice. As most of the physicians do not have adequate time to educate and reinforce knowledge in patients, the responsibility of diabetes education may be shouldered by nurses caring for the patients.

ACKNOWLEDGEMENT

The author is grateful to the management of Municipal Corporation of Greater Mumbai (MCGM) for permitting to data collection from the selected community.

Funding

There are no funding sources to report for this manuscript

Conflict of Interest

The authors report no conflict of interest

REFERENCES

1. Anjana RM, Pradeepa R, Deepa M, Datta M, Sudha V, Unnikrishnan R, Nath LM, Das AK, Madhu V, Rao PV, Shukla DK. The Indian Council of Medical Research—India Diabetes (ICMR-INDIAB) Study: Methodological Details. *Journal of diabetes science and technology*. 2011 Jul;5(4):906-14.
2. Gulabani M, John M, Isaac R. Knowledge of diabetes, its treatment and complications amongst diabetic patients in a tertiary care hospital. *Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine*. 2008 Jul;33(3):204.
3. Johnson A, Sandford J, Tyndall J. Written and verbal information versus verbal information only for patients being discharged from acute hospital settings to home. *Cochrane Database of Systematic Reviews* 2003, Issue 4. Art. No.: CD003716. DOI: 10.1002/14651858.CD003716.
4. Mumbai district demographics-www.mcgm.gov.in
5. The World Youth 2013 Data Sheet, Population Reference Bureau. Available at www.prb.org
6. Shah VN, Kamdar PK, Shah N. Assessing the knowledge, attitudes and practice of type 2 diabetes among patients of Saurashtra region, Gujarat. *International journal of diabetes in developing countries*. 2009 Jul;29(3):118.
7. Anjana RM, Pradeepa R, Deepa M, Datta M, Sudha V, Unnikrishnan R, Bhansali A, Joshi SR, Joshi PP, Yajnik CS, Dhandhanika VK. Prevalence of diabetes and prediabetes (impaired fasting glucose and/or impaired glucose tolerance) in urban and rural India: Phase I results of the Indian Council of Medical Research-India DIABetes (ICMR-INDIAB) study. *Diabetologia*. 2011 Dec 1;54(12):3022-7.
8. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. *Diabetes care*. 2004 May 1;27(5):1047-53.
9. Mehrotra R, Bajaj S, Kumar D, Singh KJ. Influence of education and occupation on knowledge about diabetes control. *The National medical journal of India*. 2000; 13(6):293-6.
10. Ramachandran A, Snehalatha C, Kapur A, Vijay V, Mohan V, Das AK, Rao PV, Yajnik CS, Kumar KP, Nair JD, Diabetes Epidemiology Study Group in India (DESI). High prevalence of diabetes and impaired glucose tolerance in India: National Urban Diabetes Survey. *Diabetologia*. 2001 Sep 1;44(9):1094-101.
11. Baig AA, Benitez A, Quinn MT, Burnet DL. Family interventions to improve diabetes outcomes for adults. *Annals of the New York Academy of Sciences*. 2015 Sep 1;1353(1):89-112.

12. Dagenais GR, Gerstein HC, Zhang X, McQueen M, Lear S, Lopez-Jaramillo P, Mohan V, Mony P, Gupta R, Kutty VR, Kumar R. Variations in diabetes prevalence in low-, middle-, and high-income countries: Results from the prospective urban and rural epidemiology study. *Diabetes care*. 2016 Mar 10;dc152338.
 13. Raithatha SJ, Shankar SU, Dinesh K. Self-care practices among diabetic patients in Anand District of Gujarat. *ISRN family medicine*. 2014 Feb 11;2014.
 14. Ramachandran A. Epidemiology of diabetes in India—three decades of research. *JAPI*. 2005 Jan 29;53:34-8.
 15. Mohan V, Shah S, Saboo B. Current glycaemic status and diabetes related complications among type 2 diabetes patients in India: data from the A1chieve study. *The Journal of the Association of Physicians of India*. 2013;61(1 Suppl):12-5.
 16. Ali ZH. Health and knowledge progress among diabetic patients after implementation of a Nursing Care program based on their profile. *Journal of Diabetes and Metabolism*. 2011;2(2):121.
 17. Mohan D, Raj D, Shanthirani CS, Datta M, Unwin NC, Kapur A, Mohan V. Awareness and knowledge of diabetes in Chennai—the Chennai urban rural epidemiology study [CURES-9]. *Japi*. 2005 Apr 1;53:283-7.
 18. Negarandeh R, Mahmoodi H, Noktehdan H, Heshmat R, Shakibazadeh E. Teach back and pictorial image educational strategies on knowledge about diabetes and medication/dietary adherence among low health literate patients with type 2 diabetes. *Primary care diabetes*. 2013 Jul 1;7(2):111-8.
 19. Gucciardi E, DeMelo M, Lee RN, Grace SL. Assessment of two culturally competent diabetes education methods: individual versus individual plus group education in Canadian Portuguese adults with type 2 diabetes. *Ethnicity and Health*. 2007 Apr 1;12(2):163-87.
 20. Anilvince V, Rao PN, Sundaram NM. A Study to assess the effectiveness of foot care instruction on the knowledge among diabetic patients in a selected community. *International Journal of Scientific Research Publication*. 2015 Jun;5:1-6.
- How to cite this article: Sriram M, Doke P, Dasila P. Impact of communication on self care management among individuals with diabetes mellitus in an urban community in Mumbai. *Int J Health Sci Res*. 2020; 10(7):1-11.
