ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 8.4
IJAR 2021; 7(1): 388-393
www.allresearchjournal.com
Received: 15-11-2020
Accepted: 19-12-2020

Jyotika Sharma
M.Sc. Nursing Final Year Student, Department of Community Health Nursing, M.M College of Nursing, Maharishi Markandeshwar Deemed to be University, Ambala, Haryana, India

Uma J Deaver
Professor and Head, Department of Community Health Nursing, M.M. College of Nursing, Maharishi Markandeshwar Deemed to be University, Ambala, Haryana, India

Pooja Jaswal
Associate Professor, Department of Community Health Nursing, M.M College of Nursing, Maharishi Markandeshwar Deemed to be University, Ambala, Haryana, India

Jyoti Sarin
Director Principal, M.M College of Nursing, Maharishi Markandeshwar Deemed to be University, Ambala, Haryana, India

Corresponding Author:
Uma J Deaver
Professor and Head, Department of Community Health Nursing, M.M. College of Nursing, Maharishi Markandeshwar Deemed to be University, Ambala, Haryana, India

A study to assess the effectiveness of self-help group (SHG) of adults in terms of adherence to medication and health behavior among adults with diabetes residing in Ambala, Haryana

Jyotika Sharma, Uma J Deaver, Pooja Jaswal and Jyoti Sarin

Abstract
Diabetes is a disease which is a part of larger global epidemic of non-communicable diseases. It has become a major public health challenge globally.
A quasi experimental one group pre-test posttest design was adopted in quantitative approach. The study conducted in five villages of Ambala Haryana in November 2018. Forty adults with diabetes were selected by snow ball technique. Data was collected by using standardized tool Medication Adherence Rating Scale (MARS), diabetic dietary questionnaire and SF-36 before and after intervention. The major finding revealed that, the mean post-test adherence to medication scores and standard deviation of adults with diabetes (9.98±0.15) were significantly higher than mean pre-test of adherence to medication scores (8.68±2.62) and the mean post-test dietary pattern scores with standard deviation of adults with diabetes (49±1.93) were significantly higher than mean pre-test level of dietary pattern adherence scores (42.59±3.97). The post-test health related QOL scores and standard deviation of adults with diabetes (74.9±9.2) were significantly higher than mean pre-test to health related QOL scores (56±16.07). A significant association result was found between the pretest score of adherence to medication and dietary pattern and health related quality of life with religion and occupational status.

Keywords: Assess, SHG, adherence, medication, Ambala

Introduction
Diabetes is a disease which is a part of larger global epidemic of non-communicable diseases. It has become a major public health challenge globally [1]. The nature of the diabetes mellitus and its complications harm individual's health and constitute an economic load on individual, families and countries [2].
Due to its chronic nature, diabetes causes devastating personal suffering and drives families into poverty. Governments worldwide are struggling to meet the cost of diabetes care. Furthermore, the burden of cost will continue to expand due to the growing number of people with diabetes [3].
According to the World Health Organization, it is estimated that 1.6 million deaths were directly caused due to diabetes in 2016 and in 2017, report states that 425 million people are living with diabetes all over the world. By 2045, 629 million people will be living with diabetes globally [4].
According to Indian Council of Medical Research, India currently represents 49 percent of the world diabetes burden, with an estimation of 72 billion cases in 2017 which may double to 134 million by 2025. Hence this is a serious public health challenge to the country. The higher incidence of diabetes was seen in the state of Punjab, Karnataka and Tamil Nadu. Tamil Nadu had and 53 deaths per 1,00000 populations from diabetes was among these Indian states [5].
According to WHO the Diabetes is a metabolic disease which is chronic, in nature characterized by high levels of blood glucose (or blood sugar), which shows after some time to serious problems like cardiac failure, damage of blood vessels, retinopathy renal failure and nerves damage. The normal range of the blood sugar between 4.0 to 5.4 mmol/L (72 to 99 mg/dl) when fasting up to 7.8mmol/L (140mg/dl) 2 hours after eating [6].

Hypotheses

Following hypotheses were tested at the 0.05 level of significance

H_1: There was a significant difference in mean pretest and posttest adherence to medication score of adults with diabetes mellitus.

H_2: There was a significant difference in mean pretest and posttest health behavior score of adults with diabetes mellitus.

H_3: There was a significant association of pretest Adherence to medication of adults with diabetes mellitus with their selected variables.

H_4: There was be a significant association of pretest Health behavior of adults with diabetes mellitus with their selected variables.

Methodology quantitative research approach was adopted for the study and the design was Quasi Experimental One group pre-test-post-test design was used based on the participatory action research principle. Independent variable is the adults with diabetes and the Dependent variables are the Adherence to medication and dietary pattern and health related QOL.

Sampling criteria: Following adults with diabetes were included in the study those

1. In the age group of 19-60 years.
2. Diagnosed with diabetes mellitus type 2 with oral medications only.
3. Able to speak & understand Hindi
4. Willing to participate in the study.

A quasi experimental design was taken up and 40 adults with diabetes were selected by using snowball sampling technique. Reliability was calculated by Cronbach alpha for Medication Adherence Rating Scale, Diabetic dietary questionnaire and SF-36 questionnaire and it was 0.72, 0.82 and 0.92.

Ethical approval was obtained from the ethical committee of MMIMS & R Hospital, Mullana and Ambala. Permission for pilot study was taken from Sarpanch of Mullana Village Ambala Haryana. Permission for final study was taken from Sarpanchs of five villages. (i.e., Bhudian, Simbla, Doskhra, Holi and Mullana) Haryana. Consent was prepared and filled for the study subjects regarding their willingness to participate in the research study. Purpose of the study was explained to sample subjects before data collection.

Selected Variables was used to collect data and to assess adherence to medication and health behavior in terms of dietary pattern and health related Quality of life by using standardized tool Medication Adherence Rating Scale (MARS), diabetic dietary questionnaire and SF-36 before and after intervention. Pretest was taken on first day and posttest was taken on 22th day. Medication adherence rating scale is a standardized tool that consist of 10 items and each question have dichotomous response (yes/No)). It has consist of 2 positive question and 8 negative question. A likert scale was prepared to assess dietary pattern of adults with diabetes. It consisted of 18 items related to dietary pattern. The tools has 8 positive statement and 10 negative statement scattered randomly. Negative question were scored in reverse order. The likert scale was categorized as Never (N) Sometime (S) and Regularly (R). WHO SF-36 Questionnaire is a standardized tool to assess the health related Quality of life. All questions are scored on a scale from 0 to 100, with 100 representing the highest level of functioning possible for health related QOL. Aggregate scores are compiled as a percentage of the total points possible, using the RAND table.

Final data collection was done from October 2018 to November 2018. Forty adults with diabetic were selected by using Snow ball technique from five villages which was selected using convenient method. SHG was formed where 8 adults with diabetes were in each group. After pre-test was taken on the first day, health education of diabetes was given, followed by planning of next meeting was done. On the 8th day, 15th day, and on 22nd day exchange of information and checking of height, weight and RBS was done. On the 22nd day post-test was taken.

Statistical analysis

Data was analyzed using Statistical Package for Social Sciences (SPSS) version.

Data analysis was done by using descriptive statistics i.e. mean, standard deviation and inferential statistics such as t-test, ANOVA.

Result

Section I: Selected variables

Frequency and percentage distribution of selected variables showed that out of 40 adults with diabetes One third of adults with diabetes (30%) were in the age group of 50-60 years. All of adults with diabetes (100%) were female. More than half of adults with diabetes (62.5%) were married. Most of adults with diabetes (95.5%) were Hindu. Less than half of adults with diabetes (37.5%) had primary education. Majority of adults with diabetes (85%) were housewives. 72.5% of adults with diabetes were suffering from diabetes since 1-5 year, 100% had their report on diagnosis from physicians. All of adults with diabetes 100% were on treatment, 72.5% on tab metformin 500mg and 27.5% on tab Glimepiride 2mg. None of adults with diabetes smoke or ingest tobacco and drink alcohol.

Table 1: Frequency and distribution of measurement of blood pressure of Adults with diabetes

N=40

S. No.	Clinical Parameters	Pre test f (%)	Post test f (%)
1.	**Systolic Blood pressure**		
	1.1 100-120 mmhg	19(47.5)	27(67.5)
	1.2 121-140mmhg	19(47.5)	13(32.5)
	1.3 141-160mmhg	2(5)	0(0)
2.	**Diastolic Blood pressure**		
	2.1 80-90 mmhg	38(95)	40(100)
	2.1 90-100mmhg	2(5)	0(0)

Table 1 shows that SHG intervention less than half of adults with diabetes (47.5%) were having their systolic blood pressure in the 100-140 mmHg range and 5% were in the 141-160mmHg range, while 95% of the adults with diabetes had their diastolic blood in the 80-90mmhg range and 5% were in 90-100mmHg. After the SHG intervention, most of adults with diabetes (67.5%) were having their systolic blood pressure in the 100-120mmHg range and all of adults with diabetes (100%) were having 80-90mmHg diastolic blood pressure.

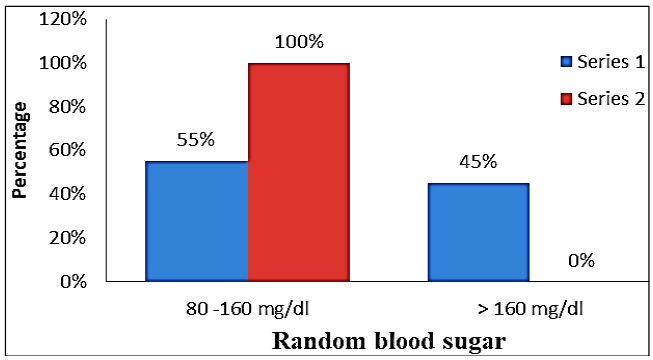

Figure 1 showed that before SHG intervention more than half of adults with diabetes (55%) were having their RBS in the range of 80-160mg/dl and 45% had more than 160mg/dl. After the SHG intervention, all of adults with diabetes (100%) had their RBS in the 80-160 mg/dl range.

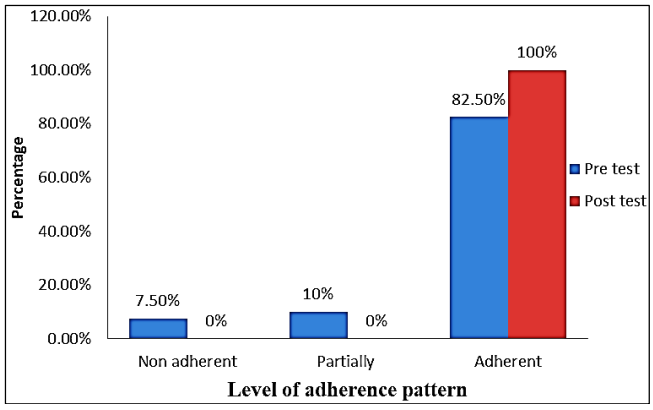

Figure 2 showed that frequency and percentage distribution of adults with diabetes in terms of level of adherence to medication. Most of the adults with diabetes 33(82%) were adherent to medication but 10% and 7.5% were partially adherent and not adhering to medication respectively. After the SHG intervention all of adults with diabetes 40 (100%) were having adherence to medication.

Table 2: Range of score, Mean, Median and Standard Deviation of adherence to medication among adults with diabetes before and after SHG intervention

Adherence to medication	Range of score	Mean ± S.D	Median
Pre-test	8-10	8.68±2.62	10
Post-test	9-10	9.98±0.158	10
Maximum score=10			Minimum Score=0

Table 2 showed that that mean posttest adherence to medication score **(**9.98±0.158) was higher than pre-test adherence to medication score (8.68±2.62). The median of both pretest and posttest was 10. These finding showed that adults with diabetes developed adherence to medication.

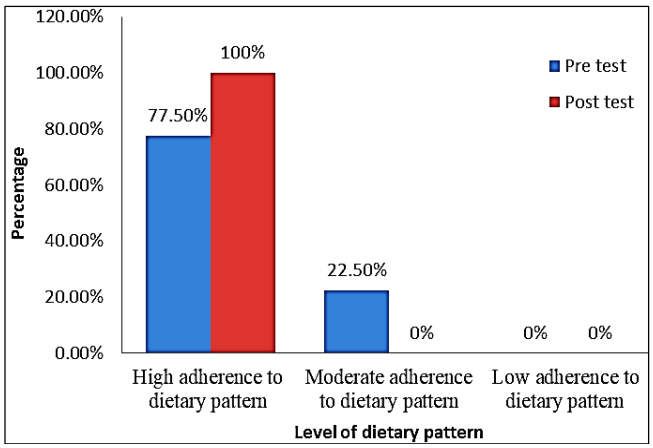

Figure 3 showed that the frequency and percentage distribution of level of dietary pattern among adults with diabetes. Majority of the adults with diabetes were having good adherence to dietary pattern i.e. 31(77.5%) whereas in post-test All of adults with diabetes were having good adherence to dietary pattern 40(100%).

Table 3: Range of score, Mean, Median and Standard Deviation of Dietary pattern adults with diabetes before and after SHG intervention

Dietary pattern	Range of Score	Mean±S.D	Median
Pre-test	33-50	42.9±3.97	43
Post test	45-53	49±1.93	50

Maximum= 54 Minimum = 18

Table 3 showed that mean posttest of dietary pattern score (49±1.93) was higher than pre-test dietary pattern score (42.9±3.97). The median for post-test was 50 and for the pre-test 43. These finding showed that SHG intervention was able to change the dietary pattern of the adults with diabetes.

Table 4: Range of score Mean, Median and Standard Deviation of health related QOL among adults with diabetes before and after SHG intervention

Health related QOL	Max marks	Mean ± S.D	Median
Pre test	0-100	56±16.07	58
Post test	0-100	74.9±9.2	75

Table 4 that mean post test score of health related quality of life 74.9±9.2 was higher than pre-test 56.2±16.07.The median for posttest was 75 and pre-test 58.These finding shows that SHG intervention improved health related QOL among adults with diabetes.

Table 5: Domain wise range of score, mean, median and standard deviation of health related QOL among adults with diabetes before and after SHG intervention

S. No.	Domain	Range of Score	Mean ± S.D	Median
1)	**Physical functioning**			
	Pre-test	30-100	84.13±17.2	90
	Post -test	75-100	95.88±6.19	100
2)	**Role limitation due to physical health**			
	Pre-test	0-100	50.63±39.42	75
	Post-test	0-100	80.00±27.2	100
3)	**Role limitation due to emotional problem**			
	Pre-test	0-100	48.37±36.31	66

	Post-test	0-100	80.01±28.03	100
4)	**Energy/fatigue**			
	Pre-test	15-85	48.63±20.00	50
	Post-test	30-90	69.09±13.0	70
5)	**Emotional well being**			
	Pre-test	16-84	56.58±17.06	60
	Post-test	28-92	67.38±13.61	80
6)	**Social functioning**			
	Pre-test	25-87	54.58±17.0	60
	Post -test	25-100	72.38±20.16	68
7)	**Pain**			
	Pre-test	10-100	66.56±26.05	70
	Post-test	25-100	79.38±20.6	77
8)	**Role limitation due to emotional problem**			
	Pre-test	20-75	45.63±13.06	45
	Post-test	30-100	58.93±16.99	160

Table 5 showed that health related quality of life of adults with diabetes before and after SHG interventions in eight different domains. Before the SHG intervention, the mean pretest score of physical functioning was (95.88±6.19) and median 90, limitation due to physical health was (50.63±39.42) and median 75, role limitation due to emotional problem was (48±63.2) and median 66,energy/fatigue (48.63±20.0) with median as 50, emotional wellbeing was 56.58±17.06 with median 60, the social functioning of the adults with diabetes showed (72.68±20.6) and median 60, pain the mean pretest score showed 66.56±26.05 and median 70, and for Role limitation due to emotional problem 45.63±13.06 and median 45. After the SHG intervention, the mean post-test of physical functioning was (95.88±6.19) and median 100, limitation due to physical health was (80.00±27.2) and median 100, role limitation due to emotional problem was (80.01±28.03) and median 100, energy/fatigue (69.09±13.0) with median as 70, emotional wellbeing was (67.09±13.61) with median 80,the social functioning of the adults with diabetes showed (72.38±20.16) and median 68, pain the mean pretest score showed (79.38±20.6) and median 77 and for Role limitation due to emotional problem (58.93±16.99) and median 60.

Table 6: One way ANOVA and 't' value showing association of pre-test score of Adherence to medication among adults with diabetes with selected variables

S. No.	Sample Characteristics	Mean	df	F/t	p value
1.	**Age in years**				
1.1	40-45	7.90	3/36	1.437	0.248^{NS}
1.2	46-50	7.67			
1.3	51-55	9.54			
1.4	56-60	9.42			
2.	**Marital Status**				
2.1	Married	8.80	3/36	0.167	0.918^{NS}
2.2	Unmarried	8.00			
2.3	Divorced	10.00			
2.4	Widower	8.38			
3	**Religion**				
3.1	Hindu	8.61	38	0.728_t	0.003*
3.2	Sikh	10.00			
4.	**Educational Status**				
4.1	High school certificate	9.20	3/36	0.894	0.418^{NS}
4.2	Middle School certificate	8.86			
4.3	Primary School	8.27			
4.4	Illiterate	8.83			
5.	**Occupational Status**				
5.1	Household	8.44	38	1.355_t	0.003*
5.2	Business	10.0			
6.	**Total Income**				
6.1	>126,360	10.00	5/34	0.574	0.719^{NS}
6.2	47,266-63178	10.00			
6.3	31,591-47262	8.43			
6.4	18,953-31589	9.10			
6.5	6327-18949	7.67			
6.6	≤6323	7.50			
7.	**Since how long you are suffering from diabetes mellitus?**				
7.1	1-5	8.31	2/3	1.043	0.362^{NS}
7.2	6-10	9.56			
7.3	11-15	10.00			

^{NS}-Not significant (p> 0.05) * significant ($p \leq 0.05$)

Table 6 showed that ANOVA/'t' test value for association of adherence to medication among adults with diabetes with selected variables before SHG intervention. Thus the finding revealed that in pre-test there was no significant association of adherence to medication among adults with diabetes with age, marital status, educational status, total income, since how long you are suffering from diabetes, except religion and occupation i.e.(F= 0.728, 0.03) and (F=1.35, 0.03) which was significantly associated with adherence to medication among adults with diabetes. It infers that adherence to medication was dependent on selected variable of religion (Hindu, Sikh) and occupation (household, business.

Table 7: One way ANOVA and't' value showing association of pre-test score of dietary pattern among adults with diabetes with selected variables

S. No.	Sample Characteristics	Mean	df	F/t
1.	**Age in years**			
1.1	40-45	42.70	3/6	0.053
1.2	46-50	42.70		
1.3	51-55	43.11		
1.4	56-60	43.11		
2.	**Marital Status**			
2.1	Married	43.12	3/36	0.635
2.2	Unmarried	46.00		
2.3	Divorced	46.00		
2.4	Widower	42.00		
3	**Religion**			
3.1	Hindu	43.24	38	2.488
3.2	Sikh	36.50		
4.	**Educational Status**			
4.1	High school certificate	42.00	3/36	1.877
4.2	Middle School certificate	42.29		
4.3	Primary School	42.27		
4.4	Illiterate	46.33		
5.	**Occupational Status**			
5.1	Household	42.68	38	0.844
5.2	Business	44.17		
6.	**Total income**			
6.1	>126,360	48.00	5/34	1.373
6.2	47,266-63178	38.50		
6.3	31,591-47262	41.14		
6.4	18,953-31589	43.15		
6.5	6327-18949	44.50		
6.6	≤6323	43.25		
7.	**Since how long you are suffering from diabetes mellitus?**			
7.1	1-5	42.72	2/37	0.154
7.2	6-10	43.56		
7.3	11-15	42.50		

Table 7 showed that the ANOVA/'t' test value of association of dietary pattern among adults with diabetes with selected variables before SHG intervention. Thus the finding revealed that in pre-test there was no significant association of dietary pattern among adults with diabetes with age, marital status, educational status, total income, occupation status and since how long you are suffering from diabetes except religion i.e. (F=2.48, 0.01) that was significantly associated with dietary pattern of adults with diabetes. It infers that adherence to medication was dependent on selected variable of religion (Hindu, Sikh) and occupation (household, business).

Table 8: One way ANOVA and 't' value showing association of pre-test score of health related QOL among adults with diabetes with selected sample characteristics

S. No.	Sample characteristics	Mean	df	F/t	P value
1.	**Age in years**				
1.1	40-45	55.64	3/36	0.22	0.87^{NS}
1.2	46-50	63.53			
1.3	51-55	46.25			
1.4	56-60	56.94			
2.	**Marital Status**				
2.1	Married	57.57	3/36	0.87	0.96^{NS}
2.2	Unmarried	55.52			
2.3	Divorced	49.43			
2.4	Widower	56.43			
3.	**Religion**				
3.1	Hindu	58.07	38	2.07	0.52
3.2	Sikh	35.53			
4.	**Educational Status**				
4.1	High school certificate	69.33	3/36	1.40	0.25^{NS}
4.2	Middle school certificate	54.16			
4.3	Primary School	54.12			
4.4	Illiterate	60.19			
5.	**Occupational Status**				
5.1	Household	54.93	38	2.25	0.03*
5.2	Business	66.33			
6.	**Total Income**				
6.1	>126,360	78.02	5/34	0.90	0.492^{NS}
6.2	47,266-63178	48.69			
6.3	31,591-47262	61.78			
6.4	18,953-31589	53.49			
6.5	6327-18949	62.63			
6.6	≤6323	56.11			
7.	**Since how long you are suffering from diabetes mellitus?**				
7.1	1-5	55.54	2/37	1.34	0.28^{NS}
7.2	6-10	63.53			
7.3	11-15	46.25			

Table 8 showed that ANOVA/'t' test value of association of health related QOL among adults with diabetes with selected variables. Thus the finding revealed that in pre-test there was no significant association of health related QOL among adults with diabetes with age, marital status, educational status, religion total income and since how long you are suffering from diabetes except occupation i.e. (F=2.25, p = 0.03) that was significantly associated with health related QOL of adults with diabetes. It infers that adherence to medication was dependent on selected variable occupation (household, business).

Discussion

In the present study, one third of adults with diabetes were in the age group of 56-60 year of age i.e. 12(30%). All of the adults with diabetes were female i.e. 40(100%). Majority of adults with diabetes were household i.e. 34(85%). More than half of adults with diabetes had primary education. These finding are consistent to a mixed method study conducted by Arissara Sukwatjana Gail low *et al*. (2011) on benefits of a self-help group for rural thai elder with type-2 diabetes where they found that majority 17(85%) of rural thai elder were in the age group of 60-70 years and all (100%) of rural thai elder were female. Half 10 (50%) of rural Thai elder were female. All 20 (100%) rural thai elder had completed primary education [7].

In the present study, majority of adults with diabetes having good adherence to medication i.e. 33(82.5%) before administration of intervention. The finding were contradictory to a retrospective cohort study conducted by Carola A Huber Oliver Reich (2016) on medication adherence in patient with diabetes mellitus: does physician drug dispensing enhance quality of life at Switzerland where they found that 40% patient with diabetes were attained good Adherence to oral anti hyperglycemic medication. Further these finding were contradictory to the study conducted by Syed Faizan Ali *et al*. (2013) where they found that 60 (80.42%) were having good adherence to medication and 19(20%) partially adherence to medication [8].

In present study, majority of adults with diabetes were having good adherence to dietary pattern i.e. 31(77.5%) before administration of intervention. The finding of the study partially consistent and contradictory with a cross-sectional study conducted by El. H. Baker (2015) on nutritional assessment of type-II diabetic patient at Minufiya University, where they found that half of the diabetic patient 25.8% rarely or never eats vegetables. Majority (45.2%) consumes regular sweets.

In the present study majority (92.5%) adults with diabetes were having the high physical functioning and more than half (55%) were having the low energy and fatigue. These finding are partially consistent and contradictory to a cross-sectional study conducted by Jamile S Codogno Romulo (2011) on the burden of physical activity on type 2 diabetes, where they found that 6% of women with diabetes were having the low physical functioning and third half of women with diabetes (27%) performing the aerobic exercise.

In the present study some adults with diabetes using foods like bitter gourd juice, orange peels, jamun powder and garlic. Adults with diabetes went to morning and evening walk's. These finding were consistent to a mixed method study conducted by Arissara Sukwatjana Gail *et al*. (2011) on benefits of Self Help Group for rural thai elder were found that most of the participants were using bitter vegetable and most of the participants using lumber and elastic belt to exercise their arms, legs, shoulder and waist.

Conclusion

Self Help Group was an effective strategy to improve the adherence to medication and health behavior of adults with diabetes.

Recommendation

- A similar study can be conducted to see the effectiveness of Self Help Group in terms of adherence to medication and health behavior in urban areas.
- A comparative study can be undertaken with a large sample in different villages and groups to generalize the finding.
- A study can be done to develop the health education packages on adherence to medication and health behavior.
- A study can be conducted to assess alternative interventions on glycemic control of adults with diabetes.
- A qualitative study can be conducted to assess the experiences of Self Help Group.

Acknowledgement

We are thankful to all the participants of study.

Conflict of Interest

The authors declare no conflict of interest.

References

1. Verma R, Khanna P, Bharti. National programme on prevention and control of diabetes in India: Need to focus. Australas Med J 2012;c(6):310-5.
2. Yesudian CAK, Grepstad M, Visintin E, Ferrario A. The economic burden of diabetes in India: A review of the literature. Global Health 2014;10(1):1-18.
3. Diabète FI Du. Eighth edition 2017, 16-17.
4. Chan M. Global report on diabetes. World Heal Organ [Internet] 2014;58(12):1-88. Available from: http://www.who.int/about/licensing/ copyright_form/index.html).
5. Anjana RM, Pradeepa R, Deepa M, Datta M, Sudha V, Unnikrishnan R *et al*. The Indian Council of Medical Research-India Diabetes (ICMR-INDIAB) study: methodological details. J Diabetes Sci. Technol 2011;5(4):906-14.
6. https://www.onlymyhealth.com/normal-range-blood-sugar-levels-1371726221
7. Sukwatjanee A, Pongthavornkamol K, Low G, Suwonnaroop N, Chokkhanchitchai S. Benefits of a Self-Help Group for Rural Thai Elders with Type-2 Diabetes 2011, 220-33.
8. Olorunfemi O. Medication belief as correlate of medication adherence among patients with diabetes in Edo State, Nigeria 2019, 197-202.