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Original Article

Assessment of Polypharmacy among Diabetic Patients in Tertiary Care Hospital of Nepal

Anita Yadav[1*], Sagar Acharya[1], Pradip Chhetri[2], Anjan Palikhey[3]

Author's Affiliations

[1]Department of Pharmacy, Universal College of Medical Sciences, Bhairahawa, Nepal
[2]Department of Community Medicine, Universal College of Medical Sciences, Bhairahawa, Nepal
[3]Department of Pharmacology, Universal College of Medical Sciences, Bhairahawa, Nepal

Correspondence to:
Anita Yadav
Lecturer
Department of Pharmacy
Universal College of Medical Sciences
Bhairahawa, Nepal
Email: anita.yadav2047@gmail.com

ABSTRACT

Background & Objective: Diabetes mellitus is a long-term metabolic condition that is accompanied by co-morbidities. Patients therefore use anti-diabetic medications in addition to other medications. Treatment with numerous drugs involves many hazards in addition to effectiveness. Therefore, diabetic people use multiple medications. The main aims of this study were to find out the prevalence of polypharmacy and the factors responsible for polypharmacy, and the consequences of polypharmacy.

Material and Methods: A prospective observational study was conducted at the outpatient department of the Universal College of Medical Sciences and Teaching Hospital, Bhairahawa, Nepal from 12th February to 31st March 2021. A total of 150 patients who met the inclusion criteria and agreed to give written informed consent were enrolled in this study. A pre-validated questionnaire was used to assess polypharmacy among diabetic patients. The Statistical Package for Social Sciences (SPSS) software version 20 was used to enter and analyze data.

Results: A total of 150 diabetic patients were included in this study. Among them, about 62.66% had polypharmacy. Age and duration of disease were highly significant with polypharmacy. Coexisting chronic conditions were highly associated with polypharmacy, like cardiovascular (AOR=5.552), musculoskeletal (AOR=5.050), mental (AOR=7.835), and digestive (AOR=3.778). The most common oral anti-diabetic agent was metformin.

Conclusion: Polypharmacy was highly prevalent among diabetic patients. The rate of polypharmacy increases as the age and duration of disease increases. Polypharmacy has many consequences, like adverse drug events, increased costs, decreased compliance, and decreased quality of life.

Keywords: Co-morbidities, Diabetes Mellitus, Polypharmacy

INTRODUCTION

Diabetes is a metabolic disorder that is presented with hyperglycemia, glycosuria, hyperlipidemia, negative nitrogen balance and ketonemia [1]. Diabetes affected an estimated 463 million persons worldwide aged 20 to 79 years in 2019, with the number expected to rise to 700 million by 2045 [2]. The prevalence of diabetes in Nepal is 9.5 % [3]. Diabetes is a lifestyle disorder and it was the seventh leading cause of death in 2016 [4]. Patients with diabetes often have co-existing chronic conditions such as hypertension, dyslipidemia, coronary artery disease, depression and renal disease, which require the use of multiple medications to treat those conditions. These conditions put diabetic patients at high risk of polypharmacy with an estimated prevalence of 57% to 84% [5].

An assessment of polypharmacy among diabetic patients is important because polypharmacy increases the probability of adverse drug events, drug-drug interactions, duplication of therapy, decreased anti-diabetic medication compliance and poor glycemic control [6]. Decreased adherence is the main consequence of polypharmacy. Polypharmacy among diabetes patients is often associated with factors like age, sex, co-existing conditions, rurality, diabetes complications, and aggressive diabetic treatment [7]. Finding patients who are more probable to experience adverse drug reactions as a result of polypharmacy is made easier with the assessment of polypharmacy. In the same way, recognizing the causes of polypharmacy assists in its management. Therefore, the primary objectives of this study were to determine the prevalence of polypharmacy in diabetic patients at a tertiary teaching hospital in Nepal and to identify the causes of polypharmacy.

MATERIAL AND METHODS

The study was a single-centered, prospective, cross-sectional, questionnaire-based observational study. The nature of the study was quantitative. This observational study was conducted in the Out Patient Department (OPD), General Medicine, of Universal College of Medical Sciences Teaching Hospital, Bhairahawa, affiliated to Tribhuvan University, Nepal from 12th February to 31st March 2021. The sampling method used was purposive sampling and the sample size was calculated using the formula: N = (z^2×p×q)/d^2 [8]. Where, N = approximate sample size, Z = Z value at a given confidence interval (for the level of confidence of 95%, which is conventional, Z value is 1.96), p = prevalence (prevalence of diabetes is considered to be 0.095), [9] q = p-1, d = Margin of error (5%). Hence, N = (1.96) ^2×0.095× (1-0.095)/ (0.05) ^2 = 132~150. Therefore the calculated sample size was 150.

The data were collected from the prescription of patients, OPD Cards, and direct interviews with patients using unstructured questionnaires involving open-ended questions. This questionnaire was designed to assess the consequences of polypharmacy [5,10]. The questions were pre-validated by a pilot study (15 patients) and data collection was done. The data collection sheet included three sections. Section first consisted of demographic information such as age, gender, nationality, marital status, history of smoking and alcohol taking, duration of disease, education level, occupation, etc. Section second consisted of the medical history of patients and the medications used. The third section consisted of a questionnaire part. The

aim designing of a prescription drug questionnaire was to assess some general consequences of polypharmacy.

Ethical approval was obtained from Universal College of Medical Sciences and Teaching Hospital Review Committee (UCMS/IRC021/20). Permission was taken from the Medical Superintendent and General Medicine Department of Universal College of Medical Sciences to access the participants. Written consent was taken from the respondent before the study and the objectives of the study were clarified to them. Respondents were assured that the collected information is only for the study purpose. Participants were well assured that their privacy and confidentiality would be highly respected. All the diabetic patients under treatment and above 18 years, who visited the OPD of Universal College of Medical Sciences, were enrolled in this study. The patients who refused to give information were excluded from the research. Descriptive Statistical analysis was carried out in this study.

The Chi square Test was used to examine the factors associated with polypharmacy. A binary logistic regression was used to examine the factors associated with polypharmacy after adjusting for age, sex, marital status, nationality, and coexisting chronic conditions. A result of continuous and categorical measurement was presented on the mean (min-max) and in number (% significance was assessed at a 5% level of significance). All statistical analyses were carried out using Statistical Package for Social Sciences (SPSS) software version 20.

RESULTS

A total of 150 patients participated in this study. In this study, 55 (36.7%) of the study population were older patients (age greater than 60 years) and the least number of participants were in the age group 18–29 years, i.e., 3 (2)%. The mean age of the study population was 55.56 (SD = 13.21) years old, with a minimum of 18 years and a maximum of 91 years. About 86 (57.4%) of total participants had two or more two coexisting chronic conditions The majorities were Nepali 140 (93.3%), married 145 (96.7%), and a large proportion of the study population was uneducated 68 (45.3%). The study population consisted of nearly an equal distribution of females 74 (49.33%) and males 76 (50.66%). Among all the participants, 39 (26%) were smokers and 32 (21.3%) were alcohol consumers. Of those, 78 (52%) said that they did regular physical exercise. 52 (34.7%) of participants reported that they had a history of diabetes in their family, 50% had no such history, and 23 (15.3%) were unaware of their family history as shown in Table 1.

A total of 62.66% of the total participants in this study were found to be taking polypharmacy. This study showed higher prevalence of polypharmacy in elderly patients (more than 60 years of age) as compared with the lower age group. Among the polypharmacy group, 44.68% were elderly patients older than 60 years of age, whereas only 1.06% of patients were aged between 18-29 years age group. Polypharmacy was significantly higher among diabetic patients with two or more coexisting comorbid conditions as compared with those with no coexisting chronic conditions. On analyzing chronic comorbid conditions, polypharmacy was significantly higher among patients with cardiovascular disease, musculoskeletal disorders, mental disorders, and digestive disorders.

Table 1: Socio-demographic characteristics and polypharmacy

Socio-demographic Characteristics	Total N(%)	Polypharmacy N(%)	No Polypharmacy N(%)	p-value
Total	150 (100)	94 (62.66)	56 (37.33)	
Age Mean(SD)	55.56 (13.21)			
Age Group				0.013*
18-29	3 (2)	1(1.06)	2 (3.57)	
30-39	17 (11.3)	6 (6.38)	11 (19.64)	
40-49	31 (20.7)	16 (17.021)	15 (26.78)	
50-59	44 (29.3)	29 (30.85)	15 (26.78)	
>60	55 (36.7)	42 (44.68)	13 (23.21)	
Marital Status				0.651
Married	145 96.7)	90 (95.7)	55 (98.2)	
Unmarried	5 (3.3)	4 (4.3)	1 (1.8)	
Gender				0.832
Male	76 (50.66)	47 (50)	29 (51.8)	
Female	74 (49.33)	47 (50)	27 (48.2)	
Nationality				0.176
Nepali	140 (93.3)	90 (95.7)	50 (89.3)	
Indian	10 (6.7)	4 (4.3)	6 (10.7)	
Education				0.721
Primary	45 (30)	27 (28.7)	18 (32.1)	
Secondary	24 (16)	14 (14.9)	10 (17.9)	
Higher Secondary	13 (8.7)	7 (7.4)	6 (10.7)	
Uneducated	68 (45.3)	46 (48.9)	22 (39.3)	
Occupation				0.736
None	33 (22)	24 (25.5)	9 (16.1)	
Housewife	49 (32.7)	31 (32.97)	18 (32.1)	
Farmer	16 (10.7)	10 (10.63)	6 (10.7)	
Student	2 (1.3)	1 (1.06)	1 (1.8)	
Business	19 (12.7)	12 (12.76)	7 (12.5)	
Retired	19 (12.7)	9 (9.57)	10 (17.9)	
Job	12 (8)	7 (7.45)	5 (8.9)	
Cardiovascular Conditions				0.0001*
Yes	113 (75.3)	83 (88.3)	30 (53.6)	
No	37 (24.7)	11 (11.7)	26 (46.4)	
Musculoskeletal conditions				0.0001*
Yes	25 (16.7)	22 (23.4)	3 (5.4)	
No	125 (83.3)	72 (76.6)	53 (94.6)	
Respiratory conditions				0.075
Yes	12 (8)	10 (10.6)	2 (3.6)	

No	138 (92)	84 (89.4)	54 (96.4)	
Mental Conditions				0.001*
Yes	29 (19.3)	26 (27.7)	3 (5.4)	
No	121 (80.7)	68 (72.3)	53 (94.6)	
Digestive Conditions				0.0001*
Yes	43 (28.7)	37 (39.4)	6 (10.7)	
No	107 (71.3)	57 (60.6)	50 (89.3)	
Chronic Kidney Disease				0.001*
Yes	17 (11.33)	17 (18.08))	0 (0)	
No	133 (88.67)	77 (57.9)	56 (42.1)	
≥2 Co-morbidities	86 (57.4)			0.0001*
Smoking				0.829
Yes	39 (26)	25 (26.6)	14 (25)	
No	111 (74)	69 (73.4)	42 (75)	
Alcohol				0.950
Yes	32 (21.3)	16 (17)	16 (28.6)	
No	118 (78.7)	78 (83)	40 (71.4)	
Disease Duration				0.000*
<1 Year	37 (24.7)	13 (13.83)	24 (42.85)	
1-3 Years	24 (16)	14 (14.89)	10 (17.85)	
3-5 Years	27 (18)	19 (20.21)	8 (14.28)	
>5 Years	62 (41.3)	48 (51.06)	14 (25)	
Family History				0.259
Yes	52 (34.7)	35 (37.2)	17 (30.4)	
No	75 (50)	48 (51.1)	27 (48.2)	
Unknown	23 (15.3)	11 (11.7)	12 (21.4)	
Exercise				0.766
Yes	78 (52)	48 (51.1)	30 (53.6)	
No	72 (48)	46 (48.9)	26 (46.4)	

Some factors are highly associated with polypharmacy, like age, duration of disease, and coexisting chronic conditions. Polypharmacy was more common in older people and increased with disease duration.

Similarly, cardiovascular, musculoskeletal, mental, and digestive conditions were highly associated with polypharmacy. Adults with diabetes and cardiovascular conditions were five times more likely to have polypharmacy compared with adults with diabetes and without cardiovascular conditions, five times more with musculoskeletal conditions, seven times more with mental conditions, and three times more with digestive conditions. The Adjusted Odds Ratio (AOR) and 95% Confidence Intervals from logistic regression are shown in Table 2. A total of 150 prescriptions were analyzed. The present study revealed that the oral anti-diabetics were highly prescribed i.e 136 (90.66%)

Table 2: AOR and 95% Confidence Intervals logistic regression on polypharmacy

Factors	AOR	95% CI	p-value
Age Group			0.018*
30-39 vs. 18-29	1.091	0.081-14.664	
40-49 vs. 18-29	2.133	0.175-26.033	
50-59 vs. 18-29	3.867	0.324-46.176	
≥60 vs. 18-29	6.462	0.541-77.139	
Duration of Disease			0.001*
<1 Year			
1-3 Years	2.585	0.899-7.427	
3-5 Years	4.385	1.509-12.741	
>5 Years	6.330	2.573-15.568	
Cardiovascular Conditions			
Yes vs. No	5.552	1.991-15.485	0.001*
Musculoskeletal Conditions			
Yes vs. No	5.050	1.872-13.627	0.001*
Mental Conditions			
Yes vs. No	7.835	1.932-31.784	0.004*
Digestive Conditions			
Yes vs. No	3.788	1.247-11.50	0.019*

followed by Calcium Channel blockers 59 (39.33%) and Angiotension II Recepter blockers 53 (35.33%) which is shown in detail in Table 3. The prescription pattern of anti-diabetic medications showed that the drugs were prescribed in single therapy as well as in combination therapy. In combination therapy, the Metformin + Glimepiride combination was prescribed highly i.e 40 (26.67%) followed by Metformin+ Sitagliptin/Linagliptin 20 (13.33%). In single therapy, metformin alone was prescribed in 22 (14.67%) followed by Insulin alone i.e 14 (9.33%). The details of the prescription pattern of anti-diabetic medications are shown in Table 4.

Table 5 shows that about 39 (41.5%) of participants in the polypharmacy group said they had trouble remembering medication use compared to 38 (67.9%) of those in the no polypharmacy group. This was statistically associated with polypharmacy (p-value = 0.002). 71 (75.5%) of the polypharmacy group said that they felt taking too many medications while only 7 (12.5%) of the no polypharmacy group felt the same and the association with polypharmacy was found to be significant (p-value = 0.001).

Nearly 87 (92.6%) of the polypharmacy group said that they felt decreased quality of life. This was also associated with polypharmacy (p-value=0.001). The answer to same question by patients of the no polypharmacy group was "Yes" by 37 (66.1%) because even if they were not under polypharmacy they also should take anti-diabetic medications for longer periods.

About 52 (55.3) % of the polypharmacy group felt anxiety about taking their medications whereas only 13 (23.2%) of the no polypharmacy group felt anxiety. Feelings of anxiety and polypharmacy were statistically associated (p-value = 0.001). 90 (95.7%) of the polypharmacy group said that they felt better after taking their medications and 53 (94.6%) of the no polypharmacy group also responded the same. In the no polypharmacy group, only 14 (25%) of participants had an economic burden. Thus, the economic burden was associated with polypharmacy (p-value = 0.001).

Table 3: Mostly Prescribed Therapeutic Class of Drugs among the Study Population

Class of Medication	N (%)
Oral Anti-diabetics	136(90.66)
Calcium Channel Blockers	59(39.33)
Angiotensin II Receptor	53(35.33)
Anti-hyperlipidemic Drugs	45(30)
Vitamins And Minerals	34(22.67)
Drugs for Mental Illness	29(19.33)
Diuretics	27(18)
Proton Pump Inhibitors	27(18)
Anti-Gout/Arthritis	25(16.67)
Insulin	24(16)
Antiplatelet Drugs	23(15.33)
Thyroid Analogues	22(14.67)
Beta Blockers	20(13.33)
Alpha Adrenergic Blockers	16(10.66)
Antimicrobials	15(10)
Histamine Receptor Blockers	13(8.67)
Anti-asthmatics	12(8)
Non-steroidal Anti-inflammatory Drugs	12(8)
Corticosteroids	8(5.33)
ACE Inhibitors	3(2)
Anti-anginals	2(1.33)

Table 4: Prescription Pattern of Anti-diabetic Medications

Drug(s)	N (%)
Metformin + Glimepiride	40(26.67)
Metformin Alone	22(14.67)
Metformin+ Sitagliptin/Linagliptin	20(13.33)
Metformin+ Glimepiride+ Sitagliptin/Linagliptin	17(11.33)
Insulin Alone	14(9.33)
Sitagliptin/Linagliptin Only	10(6.67)
Sitagliptin+Glimeperide	7(4.67)
Metformin + Insulin	5(3.33)
Glimeperide+Sitagliptin+ Metformin+Acarbose	4(2.66)
Insulin+Metformin+Sitagliptin	3(2)
Insulin+Sitagliptin/Linagliptin	2(1.33)
Glimeperide Only	2(1.33)
Sitagliptin+Metformin+Voglibose	1(0.67)
Metformin+Glimeperide+Acarbose	1(0.67)
Glimeperide+Voglibose+Sitagliptin	1(0.67)
Voglibose Only	1(0.67)

Table 5: Patients' Response to Questionnaire

Questions	Total		Polypharmacy		No polypharmacy		p-value
	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	
Q1	135 (90)	15 (10)	82 (87.2)	12 (12.8)	53 (94.6)	3 (5.4)	0.143
Q2	65 (43.3)	85 (56.7)	52 (55.3)	42 (44.7)	13 (23.)	43 (76.8)	0.001*
Q3	13 (8.7)	137 (91.)	10 (10.7)	84 (89.3)	4 (7.14)	52 (92.8)	0.491
Q4	78 (52)	72 (48)	46 (48.9)	48 (51.1)	32 (57)	24 (42.9)	0.331
Q5	77 (51.3)	73 (48.7)	39 (41.5)	55 (58.5)	38 (67.9)	18 (32.1)	0.002*
Q6	80 (53.3)	70 (46.67)	71 (75.5)	23 (24.5)	7 (12.5)	49 (87.5)	0.001*
Q7	143 (95.3)	7 (4.7)	90 (95.7)	4 (4.3)	53 (94.6)	3 (5.4)	0.757
Q8	72 (48)	78 (52)	58 (61.7)	36 (38.3)	14 (25)	42 (75)	0.001*
Q9	124(82.7)	26(17.3)	87(92.6)	7(7.4)	37(66.1)	19(33.9)	0.001*

DISCUSSION

A study conducted in China found the rate of polypharmacy to be 72.2% [11], 55.2% in Egypt [12], 56.5% in Brazil [13], 31.1% in Sudan [14], and 60% in Italy [15]. More prevalence was found in Saudi Arabia, where the rate was 77.9% [5]. A study in Ahmadabad, India, showed a very high rate (89.5%) which is incompatible with most other research studies [16]. The prevalence of polypharmacy in diabetic patients in Nepal is also following the trend of other countries such as Egypt where older adults showed 85.3% polypharmacy [17]. A similar study done in Nepal in 2006 showed the prevalence of polypharmacy to be only 30.77%, but the present study shows a higher rate [18]. The prevalence of polypharmacy may be due to changes in lifestyle, increased healthcare access and increased epidemiology of diabetes and comorbidities

In elderly patients, a higher rate of polypharmacy was found (44.68% in those > 60 years vs. only 1.06% in those 18–29 years age group, which was consistent with previous studies [5]. This may be due to the presence of more comorbid conditions. A study conducted in Pokhara, Nepal, among elderly patients found evidence that the number of drugs in diabetic patients ~~is~~ was higher [19]. In this study, the mean number of drugs was 5.46 (SD = 2.325), which was lower than the results of studies from China and other countries [11, 13, 16, 20, 21]. A high rate of polypharmacy was found in diabetics with coexisting chronic conditions. The prevalence of polypharmacy was significantly associated with the presence of coexisting chronic conditions. So, the risk of polypharmacy increases in those diabetics who have multiple chronic conditions. The cardiovascular conditions were significant enough to cause polypharmacy. The chance of polypharmacy in diabetics with cardiovascular disorders is five times greater than in those with no cardiovascular disorders. Therefore, the risk of polypharmacy increases in those who have multiple chronic conditions such as cardiovascular diseases and obesity. Duration of diabetes was also a factor of polypharmacy. This is because the function and mass of pancreatic beta cells gradually decline as the disease progresses, and a single drug is insufficient to maintain normal sugar levels, necessitating the use of multiple drugs. In another aspect, with the progression of diabetes, vascular complications also increase and additional drugs are required to correct this complication [11].

In one of the previous study, the percentage of diabetic patients having duration of disease of more than 5 years was 31.3% [22]. The chance of polypharmacy was 2.585 times greater with duration of disease of 1-3 years, 4.385 with 3-5 years, and 6.33 with more than 5 years as compared with the duration of disease of less than 1 year. So, this study clearly shows that the risk of polypharmacy increases as the duration of the disease increases. Smoking did not have a statistically significant association with polypharmacy in this study, it had numerous effects. Smoking disturbs blood flow and metabolic activities in our body, which can result in diabetic complications. Poor blood flow in the limbs may cause infections, retinopathy, neuropathy, and problems in controlling the disease [9]. Smoking and polypharmacy had no statistically significant association between smoking and the risk of developing diabetes [23]. Increased alcohol intake is responsible for chronic inflammation of the

pancreas, which directly affects insulin secretion [9]. Diabetic patients should be suggested to cease smoking and alcohol consumption to protect themselves.

The age of patients also affects the prevalence of diabetes and polypharmacy. The duration of the disease becomes longer as the patient becomes elderly and causes the presence of more comorbidities and polypharmacy [24]. In this study, 55 (36.7%) of participants were more than 60 years old, while 42 (44.68%) of the polypharmacy groups were also found in this age group. In a study in Egypt, 29.5% of total diabetics were more than 65 years old, and they comprised 23.6% of the polypharmacy group [22]. Similarly, 58.05% of diabetics were more than 60 years old in the study of Hyderabad, India [9]. The risk of polypharmacy in diabetics increases with age and as the disease progresses, the function and mass of beta cells decline, and single anti-diabetic drugs fail to control blood sugar. This leads to an increase in vascular complications, as previously reported [11].

Metformin is the first-line drug at present because it has the advantage of not causing hypoglycemia over sulphonylureas [1]. Glimepiride was prescribed for 1.33% of patients, nearly the same frequency in some studies, but a little more in another study [9, 22, 22, 25]. Insulin alone was prescribed for all type 1 diabetic, and it was prescribed for 14 (9.33%) of patients. Although type 1 diabetics were only 21.6% in previous studies, insulin was added as an adjuvant for type 2 diabetics if blood sugar was not controlled solely by oral anti-diabetic agents [12, 22]. The third choice of oral anti-diabetic agents was DPP-4 Inhibitors like Sitagliptin and Linagliptin, for 10 (6.67%) of patients, unlike other studies, 10.5%, 8.51%, 7.35%, and 6.2% [9, 16, 22, 25].

51.3% of total participants, 67.9% of the polypharmacy group, and 41.5% of the no polypharmacy group said that they had trouble remembering medication use and were statistically significant with polypharmacy, which was not consistent with a previous study in which 4.5% of total participants, 4.2% of the polypharmacy group, and 4.6% of the no polypharmacy group responded the same thing and was not statistically significant [26]. This study revealed that the consequences of polypharmacy, like feelings of anxiety, trouble in remembering medication use, the feeling of taking too many medications, economic burden, and decreased quality of life, have a significant association with polypharmacy, which is consistent with previous studies [5, 10].

As a result, polypharmacy is more common in diabetic patients who are older and have had the disease for a longer period. So, the healthcare team needs to provide care for potentially inappropriate medicines, adverse drug events and other consequences of polypharmacy. A pharmacist also has a central role in the careful management of diabetic patients, preventing unnecessary polypharmacy and monitoring appropriate polypharmacy, and suggesting and educating other health care professionals. We have included all medication classes like OTC (Over-the-Counter) medications and vitamins, which may have overestimated the rate of polypharmacy. This study uses a small sample size, so the findings of this study may not match those of the general population. For this, large sample sizes and multicenter studies may be required. This study proves

that polypharmacy significantly affects health conditions, increases the chance of drug-drug interactions, and creates an economic burden.

CONCLUSION

This study showed that polypharmacy was highly prevalent among diabetic patients. Diabetes was usually present with coexisting chronic conditions. The main reasons for prescribing polypharmacy are the inability of a single anti-diabetic agent to control sugar levels and the presence of coexisting chronic conditions. Polypharmacy is highly associated with age, duration of disease, and coexisting conditions like cardiovascular, musculoskeletal, mental, and digestive conditions. Polypharmacy has several consequences, like decreased quality of life, risk of drug-drug interactions, decreased compliance, drug burden to patients, and increased costs. It is recommended that to do more research to assess medication adherence because polypharmacy has been shown to reduce drug adherence. To ensure that the results are accurate and dependable, it is also suggested that this type of study should be carried out in a multicenter setting with a large sample size.

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ABBREVIATIONS

Q1=Do you feel that all these prescription drugs are necessary?
Q2=Do you feel anxiety about taking medications?
Q3=Do you know side effects of these medications?
Q4=Is there a non-pharmacological approach you can try instead of a drug?
Q5=Do you have trouble remembering medication use?
Q6=Do you feel that you are taking too many prescription medicines?
Q7=Do you feel that your medications helped you feel better?
Q8=Do you feel that taking these medications has made you economic burden?
Q9=Do you feel that taking too many medicines have decreased your quality of life?

Conflict of interest

We declare no conflict of interest.

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Author's Contribution: *Concept and design, data analysis, interpretation of results, literature review, and revision of the manuscript-**AY;** Data collection, data analysis, writing and revision of the manuscript-**SA;** statistical analysis, revision- **PC;** revision and editing of the manuscript-**AP.** All authors read final draft and agreed to publish.*

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