

Assessment of Older Adults' Knowledge and Attitudes towards Polypharmacy



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1. ABSTRACT

Background: Older adults are more prone to polypharmacy that much more complex than just the number of medications. Poor medication knowledge can have a negative impact on medication adherence and patient safety. Older adult's attitudes about medications are a major determinant of patients' behaviors. **Aim:** Assess older adults' knowledge and attitudes towards polypharmacy. **Design:** Descriptive cross sectional design was used. **Setting:** This study was conducted at health insurance and health maintenance expense pharmacies in Bany Ebied Specialty hospital and Dikrnes General hospital in Dakahlia Governorate. **Subjects:** A purposive sample of 352 geriatric patients with polypharmacy was enrolled in the study. **Tools:** Data was collected using 3 tools; Demographic data and Medications information, Medication Knowledge evaluation questionnaire and Patients' Attitudes towards Deprescribing questionnaire. **Results:** Age of the studied older adults' patients ranged from 60 to 89 years, with a mean age of 68.35±6.017 year, males were more prevalent. Among the studied older adults 63.1% have insufficient knowledge about their medication. Majority of older adult patients (65.9%) agree with feeling having a large amount of medication, 69.6% not agree with feeling comfort with the number of their medications and 67.0% of older adults would to stop one or more of their medication to pay fewer. In addition, a strong negative correlation was found between older adult age and mean of knowledge (P=.000**) and positive correlation was found between educational level and mean of knowledge (P=.000**), there is no statistical significant relation was found between willing to deprescribe and older adult age (P=.348). **Conclusion:** Older adults knowledge about their medications was low and majority of them would to stop one or more of their medication. **Recommendation:** Designing an educational program for improving understanding of the pharmacotherapy should be implemented with the use of designs, colors and symbols to improve older adults' knowledge and attitudes about pharmacotherapy.

Keywords: Polypharmacy, older adults, knowledge, Attitude.

2. Introduction:

Polypharmacy is defined as use of five or more drugs¹. Due to age related changes in pharmacokinetics and pharmacodynamics, older people are prone to drug interactions and adverse drug reactions². Polypharmacy use in older adult populations is increasing, related to increased number of specialists³. The proportion of adults with polypharmacy doubled from 11.2% in 1995 to 20.8% in 2010 and from 16.9% in 2006 to 19.0% in 2014.

The prevalence of polypharmacy increased dramatically with age^{4,5}. Older adults most significantly affected by polypharmacy due to impaired hepatic and renal clearance of drugs⁶. Older adults may be more sensitive to some drugs and less sensitive to others, because the aging process alters the way in which medications are tolerated by the body creating an increased risk for complications. Reducing polypharmacy in older adults' populations needs a multi-prolonged

approach that includes risk identification, explore non pharmacologic alternatives to drugs, such as dietary changes, and determine strategies to minimize medications and interdisciplinary team work⁷.

The patient's medication knowledge can have a negative impact on medication adherence and patient safety⁸.

Nurses have a unique opportunity to help identify patients at risk for inappropriate polypharmacy and to educate patients and families about polypharmacy risk. Patient's attitudes towards disease and self-medication have great effect treatment process⁷. The vast majority of older adult feel that they are taking a large number of medications and would be willing to have a medication deprescribed⁹. Furthermore, the belief of older adults regarding medication is a key determinant in medication utilization, with most of

older adults having difficulties with their prescriptions use¹⁰.

Nurses can assist patients to understand the adverse consequences of polypharmacy and thus reduce and prevent serious drug related complications. Continuing nursing educational programs and workshops should be offered. Nurses also play a role in teaching patients about each medication, including its name, appearance, purpose, effects, potential adverse effects and interactions of each medication¹¹. Therefore the study aimed to assess older adults' knowledge, attitude, and beliefs towards polypharmacy.

Aim of the study:

Assess older adults' knowledge and attitudes towards polypharmacy.

Research questions:

Q1: What is level of the older adults' knowledge toward polypharmacy?

Q2: What is the older adults' attitude toward polypharmacy?

Q3: What is the relationship between the study variables and characteristics of the older adults?

3. Method

Research design:

The study followed a descriptive cross sectional design.

Setting :

The study was conducted at health insurance and health maintenance expense pharmacies in Bany Ebied Specialty Hospital and Dikrnes General Hospital affiliated to the Ministry of health, in Dakahlia Governate. These pharmacies received about 30 patients every day providing medical refilling of their prescriptions 20 day per month, present at 1st floor at both hospitals.

Subjects:

A purposive sample of 352 older adults with polypharmacy visiting the above mentioned setting were recruited in the study and were fulfilling the following criteria: Older adult whose age 60 years or more, who receiving five drugs or more orally, injected or inhaled that may or may not be clinically prescribed¹²

, able to communicate, willing to participate in the study and available at the time of data collection.

The sample size was estimated through clinical.com sample size calculator software, with precision/ absolute error of 5%: Sample size = $[(Z_{1-\alpha/2})^2 p (1-p)]/d^2$ Where, $Z_{1-\alpha/2}$ is the standard normal variate, at 5% type 1 error ($p < 0.05$) it is 1.96, P=the expected proportion in

population based on previous study and d=absolute error or precision¹³. So, Sample size = $[(1.96)^2(0.645) \cdot (1-0.1- 645)] / (0.05)^2 = 351.8$. Based on the above formula, the sample size required for the study was 352 older adult.

Tools of data collection:-

Three tools were used for data collection:

Tool 1: Demographic data & Medications information:

It consists of two parts:

Part 1: Demographic data such as age, sex, marital status, education level, occupation before retirement, current work, residence, older adult income, source of income and living condition.

Part 2: Medication information such as chronic diseases, number of chronic diseases, types of medications, number of regular and irregular medications(including all prescription, non, prescription or complementary medications), number of over the counter user and way of medication intake.

Tool 2: Medication Knowledge evaluation questionnaire: This tool was developed by McPherson et al., (2008)¹⁴. This tool used to evaluate the older adult medication knowledge. It consists of seven questions asked to the older adult patients about the names of all medications they are taking. If the participant stated either the brand or generic name of their medications, is recorded as a correct response. Other questions include purpose and directions for use, dosage timing, medication side effects, and participant action after occurrence of the side effect, and his action when a dose missed regardless of the patient's initial response. A number of correct responses were used to assess the total medication knowledge score. The total medication knowledge score graded from no knowledge with zero point, up to complete points (8) for each model answers and classified into:

- Sufficient knowledge: score of more than 70% (> 5.6 points)
- Insufficient knowledge: score of less than 70% (< 5.6 points)¹⁵.

Tool3: Patients' Attitude towards Deprescribing (PATD) questionnaire: This tool was developed by Reeve et al., (2013)¹⁶. It was used to assess attitudes and beliefs of older people regarding the management of the medication they are taking .It consists of 15 questions. First ten questions applied to older adult patients with 5-point likert scale from a strongly agree to a strongly disagree. Second five questions are multiple-choice questions about medication

cessation, number of tablets considered to be lot and number to be comfort with, action with regular medication cessation and assessing communication with their doctor when others involved in regular medication cessation. The questionnaire was not designed with the aim of scoring or categorizing participants according to their responses. Instead, the aim was to explore how patients felt about their medications, specifically the number of medications that they were taking and how they would feel about medication cessation.

Data collection process:

Phase I: Preparatory phase:

- 1- Official approval for conducting the study was obtained from Dean of Faculty of Nursing, Mansoura University to The directors of Bany Ebied Specialty and Dikrnes General Hospitals.
- 2-The directors of Bany Ebied Specialty and Dikrnes General Hospitals were informed about the purpose of the study & time of data collections.
- 3-Tools I (Demographic data & Medications information) was developed by researcher after reviewing the relevant literature.
- 4-Tool II and III (Medication Knowledge evaluation questionnaire and Patients' Attitudes towards Deprescribing (PATD) questionnaire) was translated by the researcher into Arabic language. The reliability of tool II,III were assured by means of r coefficient (r) = 0.85 and (r) = 0.87 respectively.
- 5-Study tools (I, II, III) were tested for content validity by a jury of five experts in the fields of Gerontological Nursing (no recommend modifications).
- 6-A pilot study was conducted on 10% of the sample size (35 older adults' patients) from the same mentioned setting before starting data collection to check and confirm the applicability of the study tools and no modifications were done. These older adults' patients were excluded from the study sample.

Phase II: Operational phase: -

- 1-After an explanation of the purpose of the study for each older adult who fulfills the study criteria and obtaining the verbal consent, the necessary data were collected through a direct interview using the study tools.

- 2-According to the schedule of the pharmacies at Bany Ebied Specialty and Dikrnes General Hospitals, the researcher visited the pharmacies 4 days per week. The time appropriated to complete the study tools lasted for 30 to 40 minutes meeting nearly from 6 to 8 older adult patients per day.

- 3-Every older adult patient was interviewed individually by the researcher to collect the necessary information via all study tools in the pharmacies and reviewing patient's records.

- 4-The researcher started the interview by introducing herself to the eligible patient, giving a brief idea about the aim and nature of the study. Then the necessary data was taken.

- 5-The data collection conducted within a period of three months from May 2020 till July 2020.

Ethical considerations:

Ethical approval was taken from the Research Ethics Committee of the Faculty of Nursing – Mansoura University. Older adults' patient's verbal consent to participate in the study obtained after an explanation of the aim, nature, benefits and risks. Privacy of the study subjects and confidentiality of the collected data was assured and were only used for the study. Each older adult patient was assured that the participation is voluntary, and they have the right to withdraw from the study without any consequences or penalty.

Statistical analysis of the data

The collected data were coded, tabulated, and analyzed using (SPSS) version 20. Descriptive statistical tests were utilized as frequent, percentage, mean, and standard deviation (Arithmetic mean (x) and standard deviation (SD). Analytical statistics include Independent sample t test, F-test (ANOVA), Pearson chi square test. Additionally, Graphs were done for data visualization using Microsoft Excel. The difference was considered significant if $P \leq 0.05$.

4. Results:

Table 1: Shows the distribution of older adults' patients according to their demographic characteristics. The age of the studied older adults ranged from 60 to 89 years with a mean age of 68.35 ± 6.017 years, patients aged 75 and above constituted 36.4% of the studied older adults, Males were more prevalent 65.3%, 75.3% of the studied older adults were married, majority of older adults were educated, 84.7% of them were working

before retirement, 61.6% of the studied older adults were residing in rural areas, 96.9 % reported that their income was not enough, and 99.4% were living with their families.

Table 2: Shows that, 97.2% of older adults had three or more diseases, 37.5% had three regularly indicated medications, 42.6% had two irregularly indicated medications and 56.5% took their medications with help.

Figure 1: Shows that, 90.1% of the studied older adults suffered from musculoskeletal disorders, 11.9% suffered from renal disorder.

Figure 2: Shows that 51.4% of studied older adults, had at least five medications totally.

Figure 3: Shows that, analgesics were the most common used over the counter medication (60%) among the studied older adults .

Figure 4: Shows that 65.9% of older adults agree with feeling having a large amount of medication, 69.6% not agree with feeling comfort with the number of their medications, 75.0% of older adult agree with believing in their medication is necessary. It also observed that 82.1% of older adult patients agree with, willing to stop one or more of their regular medication, in addition, 67.6% agree with reducing the number of their medications. Moreover, 57.7% of the studied older adults not agree with feeling that they took one or more medications that no longer needed, in addition, and 92.9% of older adult would accept taking more medication for their health condition. Also, 49.7% not agree that they understand the reason of prescription of each medication, 67.0% of older adult patients would to stop one or more of their medication to pay fewer and 69.6 % of older adult with polypharmacy believe that one or more of their medication giving them side effects.

Table 3: Shows that 73% of older adults knew their drug name or generic name, 57.1% didn't knew why they are taking their medication, 87.8% knew how to take them and 88.4% knew when to take their medication. In addition 81.2% knew what to do if medication side effects occur and all the studied older adults (100%) took appositive action if they miss a dose. About two third of the studied older adults (63.1%) had insufficient knowledge about polypharmacy.

Table 4: Shows that, 61.6% of older adult tried to stop their regular medication. All the studied older adults considered that 5-9 tablets or capsules per day would be lot and 94.3% of older adult feeling comfort to take 4 tablets or capsules, in addition 83.8% of older adult feeling not comfort with involvement of pharmacist in medication follow up, and 42.3% of older adult follow up their stooped medication by taking face to face appointment.

Table 5: shows that, the age of the studied older adults affect significantly on total mean score of knowledge (P=.000**), also a statistical significant relation was found between mean knowledge score and older adults' sex, (P=.004**). A significant relation was found between mean knowledge score and older adults' education level, as high education level had greater knowledge than low education level (P= .000**), in addition no statistical significant relation was found between mean knowledge score and number of medications.

Table 6: shows that, there is no statistical significant relation was found between willing to deprescribe and older adult age (P= .348), sex (P=.165),number of chronic diseases(p=.959) and there is a statistical significant relation with number of medications(p=.000**).

Table 1: Distribution of older adults' patients according to their demographic characteristics

<i>demographic characteristics</i>	<i>N=352</i> 352	<i>%</i> (100)
Age		
60-	123	34.9
65-	101	28.7
75 and more	128	36.4
Min – Max	60 – 89	60 – 89
Mean ± SD	68.35 ± 6.017	68.35 ± 6.017
Sex		
Male	230	65.3
Female	122	34.7
Marital status (Social status)		
Married	265	75.3

Assessment of Older Adults' Knowledge and Attitudes

Widow	77	21.9
Other(Single,Divorced)	10	2.8
Education level		
Illiterate	111	31.5
Read and write	101	28.7
Intermediate Education	87	24.7
Highly Education	49	13.9
Post Graduate Education	4	1.2
Occupation before retirement		
Working	298	84.7
Not working	54	15.3
Current working		
Yes	73	20.7
No	279	79.3
Residence		
Rural	217	61.6
Urban	135	38.4
Elderly income (Economic status)		
Not enough	341	96.9
Enough	11	3.1
Source of income #		
Pension	229	65.1
Social affairs	68	19.3
Legacy	27	7.7
Help by sons	18	5.1
External work	9	2.6
Friends	1	0.3
Living with(Living condition)		
With family	350	99.4
Alone	2	0.6

Table 2: Distribution of older adults' patients according to their medical history

<i>Medical history</i>	<i>N=352</i>	<i>%</i>
Number of diseases		
Two diseases	10	2.8
Three or more disease	342	97.2
Using medication#		
Types of medications		
Anti Inflammatory Ointments	314	89.2
Vitamins	234	66.5
Antacid	226	64.2
Hypoglycemic agent	225	63.9
Antihypertensive drugs	207	58.8
Others(Glands, Eye, Skin)	173	49.1
Antibiotic	155	44.03
Blood thinner	106	30.1

Analgesic	96	27.3
Bronco dilators drugs	50	14.2
Tumors drugs	35	9.9
Number of medications regularly indicated		
One Drug	5	1.4
Two Drugs	39	11.1
Three Drugs	132	37.5
Four Drugs	131	37.2
Five Drugs and more	45	12.8
Number of drugs Irregularly indicated		
One Drug	95	27.0
Two Drugs	150	42.6
Three Drugs	78	22.2
Four Drugs	25	7.1
Five Drugs and more	4	1.1
Over the counter medications		
User	200	56.82
Non user	152	43.18
Way of medication intake		
With help	199	56.5
Without help	153	43.5

Table 3: Distribution of 'older adults' patients according to Medication Knowledge

<i>Answers</i> / <i>Questions</i>	No= 352	% 100
1-Can you list names of all medications you are currently taking		
Participant knew his drug name or generic name	257	73.0
Participant doesn't knew	95	27.0
2-Can you tell me why you are taking this medication		
Participant describe mechanism of his medication	0	0
Participant describe the purpose of his medication	151	42.9
Participant doesn't knew	201	57.1
3-Do you knew how to take your medication		
Participant describe the right way of taking medication like taking the drug with plenty of water	309	87.8
Participant doesn't knew	43	12.2
4-Do you knew when to take your medication		
Participant knew when to take his medication like on empty stomach	311	88.4
Participant doesn't knew	41	11.6
5-Do you knew the possible side effects of your medication		
Participant knew about all side effects even not felt by him	135	38.4
Participant doesn't knew	217	61.6
6-Do you knew what to do if medication side effects occur		

Assessment of Older Adults' Knowledge and Attitudes

Participant communicate with the doctor or the pharmacist or stop taking the drug or try to act with side effects	286	81.2
Participant doesn't knew	66	18.8
7-Do you knew what to do if you miss a dose of your medication		
Participant never forget a dose or took the following dose or communicate with physician or pharmacist	352	100.0
Total knowledge score		
Un sufficient	222	63.1
Sufficient	130	36.9
Total Mean Score for Medication Knowledge Evaluation questionnaire	Mean ± SD 5.12± 1.03	

Table 4: Distribution of older adults' patients according to their attitudes towards deprescribing part 2

<i>Part (2) of PATD</i>	<i>N=</i>	<i>%</i>
<i>Multiple Choice Answers</i>	352	100
11.Have you tried to stop regular medication		
No	87	24.7
Yes and I can keep without	47	13.4
Yes but I ought to back to the drug again	217	61.6
Not sure	1	0.3
12.How many different tablets or capsules per day would you consider to be lot		
5-9 Tablets	352	100
13.What is the number of tablets or capsules that you would be comfort to take		
4 Tablets	332	94.3
8 Tablets	4	1.1
12 Tablets	16	4.5
14.How comfort involvement of pharmacist in medication follow up		
I feel comfort	9	2.6
Not sure	48	13.6
I am not feeling comfort	295	83.8
15.If one regular medication was stooped what follow up		
Taking face to face appointment	149	42.3
No follow up plan needed	63	17.9
Follow up through a telephone call	137	38.9
Communication through hand mail	3	0.9

Table 5: Relationship between older adults' characteristics and mean of knowledge

<i>Item</i>	<i>No=352</i>	<i>Mean of Knowledge</i>	Significance Test
		Mean ± SD	
Age(years)			
60<65	123	5.4959±.84324	F= 20.864 P=.000**
65<70	101	5.1782±.95285	
≥70	128	4.7031±1.11086	

Sex			
Male	230	5.2304±.99076	T=2.872 P=.004**
Female	122	4.9016±1.07880	
Education level			
Illiterate	111	4.5586±1.06758	F= 18.783 P= .000**
Read and write	101	5.0693±.88609	
Secondary	87	5.5862±.93450	
University	49	5.6122±.75874	
Post university	4	5.5000±.57735	
Current working			
Yes	73	5.4795±.88364	T=3.425 P=.001 ** P=
No	279	5.0215±1.04893	
Residence			
Urban	217	5.1106±1.01686	T= -.135 P=.893
Rural	135	5.1259±1.06104	
Elderly income			
Enough	11	5.5455±.82020	T=1.402 P=.162
Not enough	341	5.1026±1.03669	
Living condition			
Alone	2	5.5000±.70711	T= .526 P=.599
With family	350	5.1143±1.03441	
Number of Medications			
5 Drugs	181	5.0442±1.00456	F=.588 P=0.672
6 Drugs	134	5.1716±1.05863	
7 Drugs	29	5.3103±1.03866	
8 Drugs	5	5.2000±.83666	
9 Drugs	3	5.0000±2.00000	

Table 6: Relationship between older adults' characteristics and willingness to deprescribe(Question: 4 of PATD-Part 1

Demographic characteristics		willingness to deprescribe					Pearson Chi-Square χ^2
		Strongly Agree	Agree	Not Sure	Not Agree	Strongly not Agree	
		%	%	%	%	%	
Age group	60<65yrs	3.1%	30.4%	1.4%	0.0%	0.0%	$\chi^2= 8$ P= .348
	65<70yrs	4.3%	23.9%	0.6%	0.0%	0.0%	
	≥70yrs	6.0%	27.8%	2.0%	0.3%	0.3%	

Assessment of Older Adults' Knowledge and Attitudes

Sex	Male	7.4%	55.1%	2.8%	0.0%	0.0%	$\chi^2=4$ P=.165
	Female	6.0%	27.0%	1.1%	0.3%	0.3%	
Education level	Illiterate	6.8%	23.6%	1.1%	0.0%	0.0%	$\chi^2=16$ P=.320
	Reads and writes	3.4%	23.6%	1.4%	0.3%	0.0%	
	Secondary	2.3%	21.3%	0.9%	0.0%	0.3%	
	University education	0.6%	12.8%	0.6%	0.0%	0.0%	
	postgraduate education	0.3%	0.9%	0.0%	0.0%	0.0%	
Monthly income	Satisfied	0.3%	2.6%	0.3%	0.0%	0.0%	$\chi^2=4$ P=.915
	Not satisfied enough	13.1%	79.5%	3.7%	0.3%	0.3%	
(Living condition)	Alone	0.0%	0.6%	0.0%	0.0%	0.0%	$\chi^2=4$ P=.979
	With family	13.4%	81.5%	4.0%	0.3%	0.3%	
Number of chronic diseases	Two diseases	0.3%	2.6%	0.0%	0.0%	0.0%	$\chi^2=4$ P=.959
	Three and more	13.1%	79.5%	4.0%	0.3%	0.3%	
Number of medications	5 Drugs	6.0%	42.9%	2.6%	0.0%	0.0%	$\chi^2=16$ P=.000**
	6 Drugs	6.0%	30.7%	1.1%	0.3%	0.0%	
	7 Drugs	1.1%	6.8%	0.3%	0.0%	0.0%	
	8 Drugs	0.0%	1.4%	0.0%	0.0%	0.0%	
	9 Drugs	0.3%	0.3%	0.0%	0.0%	0.3%	

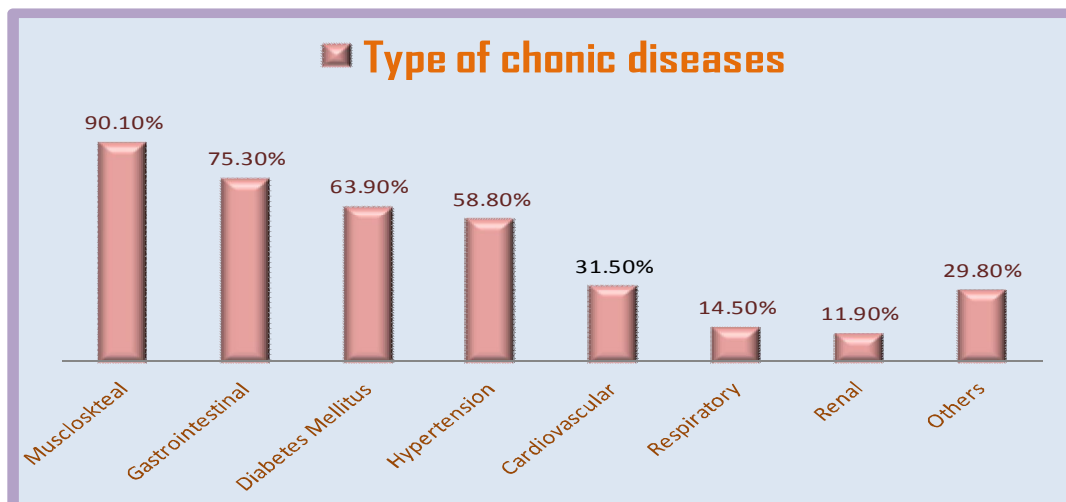


Figure 1: Distribution of the studied patients with polypharmacy according to the type of chronic diseases

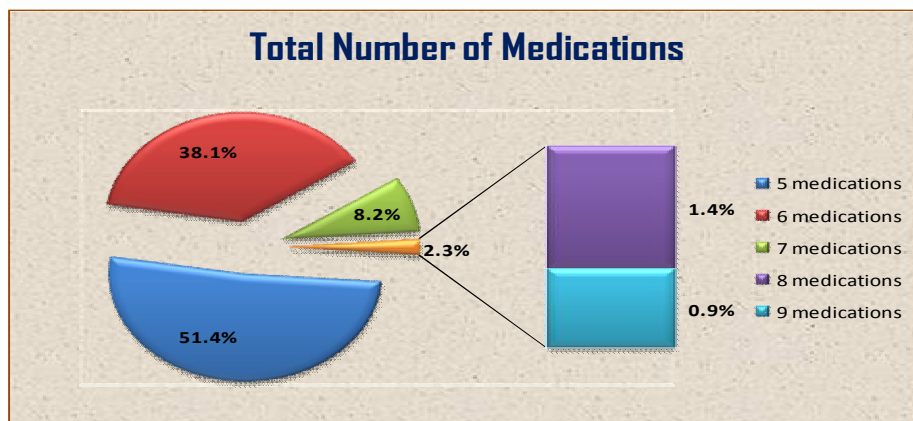


Figure 2: Distribution of the studied older adults patients with polypharmacy according to the number of medications

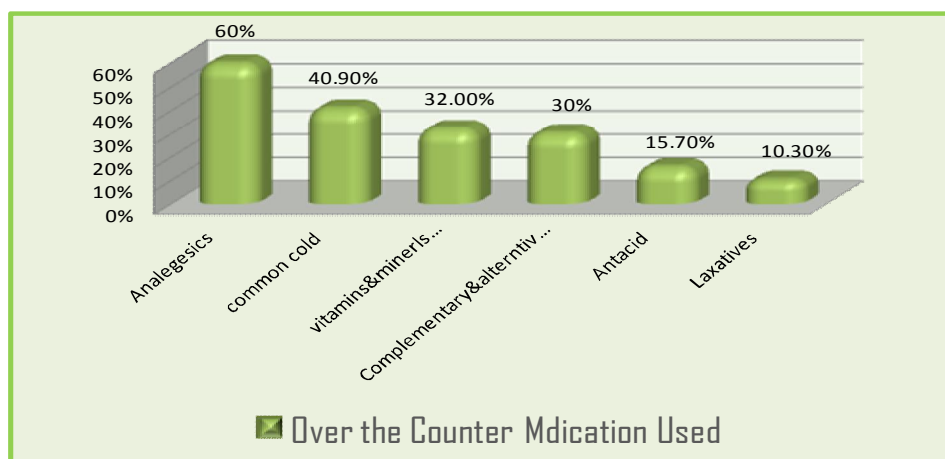


Figure 3: Distribution of the studied older adults patients with polypharmacy according to over the counter medications used

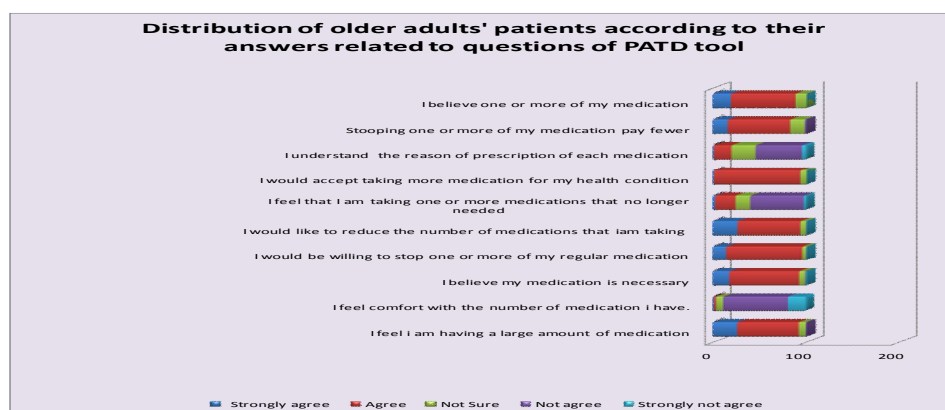


Figure 4: Distribution of the studied older adults patients with polypharmacy according to their attitudes towards deprescribing, part 1

5. Discussion:

Polypharmacy use in older adults is increasing, as older adults tend to have multiple illnesses that affect their quality of life, due to the physiological, anatomical changes and

comorbidities that must be managed by multiple medications. Age is the most powerful risk factor for developing polypharmacy^{10,17,18}. The present study showed that, the mean age of the studied older adult was 68.35 ± 6.017 years, with range of (60- 89). This result may be justified as, the

number of chronic diseases is rising with age which, indicate increasing the number of medications by older adults. This result agrees with study done by Reis et al., (2016)¹⁹ in Brazil, revealed that, the prevalence rate showed a tendency to be higher among the studied older adult who are ≥ 75 years old with a mean age 72.86 ± 7.70 years old.

The present study revealed that polypharmacy of older adult was encountered more among males than females. The high incidence in men may be attributed partially due to, men were suffering from multiple chronic diseases than females which increase the number medications. This result agrees with a study done by Eltaher & Araby, (2018)²⁰ in Egypt, revealed that the prevalence rate showed a tendency to be higher in males. In contrast, study done in Egypt by Metwally & Aly, (2020)²¹, reported that the incidence of polypharmacy were higher in females than males.

Concerning the marital status, majority of older adults, were married. This result may be justified as; the age of marriage in Egypt was 18 years. According to Egyptian cultural, marriage is the sole social institution that provides social and sexual human satisfaction legally. This result is in accordance with a study done in Egypt by Metwally & Aly (2020)²¹, that revealed that the majority of studied older adult are married. On the other hand, a study done in Egypt by Abd Allah et al., (2021)²² revealed that half of the studied older adults were married and the other half were widows.

Concerning the level of education, majority of the studied older adults are educated. This result may be justified as, males are more prevalent than females at this study and social and cultural contexts which encourage educating males in the past. This result is in accordance with a study done in Egypt by Eltaher & Araby, (2018)²⁰, which revealed that, the majority of studied older adults are educated. In contrast the study of Abd Allah et al., (2021)²² in Egypt revealed that the majority of the studied older adults, have no further education (were illiterate).

With increasing survival into older adults, the likelihood of developing multiple chronic diseases also increases⁴. Supporting that, the present study reported that, the majority of studied older adult had three or more chronic diseases. This result is in agreement with, a study done in Egypt by Eltaher & Araby, (2018)²⁰. In contrast, a study done in Egypt by Abd Allah et al., (2021)²² revealed

that majority of the studied older adults had two chronic diseases.

The current study revealed, the majority of the studied older adults took minimally five medications totally. Similar result reported by Eltaher & Araby, (2018)²⁰ in Egypt. The use of the over the counter medication (OTC) which known as self medication or prescription without doctor supervision was common among the study subjects. This result may be justified as, OTC use reducing waiting time and saving money for managing the older adults complain from their point of view. This result in line with, a study done in Egypt by Abd Allah et al., (2021)²², revealed that majority of older adults were self medicated.

The present study revealed that majority of the studied older adults took their medications with help. This result may be justified as, age related changes lead to decreasing in cognitive function for memorizing their medications and motor disability related to disease process. This result in contrast with study done by Komlanvi et al., (2017)²³ in Togo which revealed that more than one third of the studied older adults took their medication without help.

As regards to older adults' knowledge about polypharmacy, it is found that majority of participant, knew their medication name or generic name. This result may be justified as, older adults become familiar with their medications, related to periodic use and need. In accordance, a study done by Mekonnen & Gelayee, (2020)²⁴ in Ethiopia revealed that more than half of older adults correctly listed the name of their medications. However, the study of Reis et al., (2016)¹⁹ in Brazil, revealed that only low proportion of respondents knew their medication name.

In addition, the present study revealed that majority of the studied older adults, didn't know why they are taking their medication (Indication). This result may be justified as, limited communication between older adults and their physician about treatment plan related to limited time of physicians. In line with the results Mekonnen & Gelayee, (2020)²⁴ in Ethiopia. On the other hand a study in India by Gangwar et al., (2013)²⁵, revealed that majority of the studied older adults knew the indication of their medications.

Moreover, the present study revealed that majority of the studied older adults, knew how and when to take their medication. This result may be justified as, the real need of older adults to feel relieved from disease process by following medication instructions even dependently.

Consistent with, the study of Mekonnen& Gelayee, (2020)²⁴ in Ethiopia and Gangwar et al., (2013)²⁵ in India. In contrast, a study done by Mekonnen& Gelayee, (2020)²⁴ in Ethiopia, which revealed that majority of older adults didn't knew how to take their medication and Sancar et al., (2011)²⁶ in Turkey reported that majority of older adults didn't knew when to take their medication. It also observed that majority of the studied older adults, didn't knew the possible side effects of their medication. This result may be justified as, health care professionals, didn't write down any information on the prescriptions for fear of alarming the patients psychologically and this lead to poor medications information. This in accordance with, study done by (Reis et al., 2016)¹⁹ in Brazil, which revealed that only low proportion of the studied older adults knew the possible side effects of their medication.

The majority of the studied older adults knew what to do if medication side effects occur. This result may be justified as, the older adults patients fear of worsening disease process; even majority of them had three diseases or more. In line with this result, Gangwar et al., (2013)²⁵ in India revealed that, a high proportion of the studied older adults understand directions of medication use when side effects occur.

Moreover, the present study revealed that, all the studied older adults took a positive action if they miss a dose of their medication. This result may be justified as, the older adults patients need a rabid relieve of disease process by getting stick to treatment regimen and recommendations of care providers for missing doses. Similar result reported by the study of Gangwar et al., (2013)²⁵ in India.

The current study revealed that majority of the studied older adults, had insufficient knowledge about their medication. This result may be justified as, lack of communication between physicians and older adults about treatment plan and prescribing medications without providing instructions. This result in accordance with, a study done in Egypt by Abd Allah et al., (2021)²² in which the majority of the studied older adults had poor knowledge of their medications.

Concerning older adults' attitudes about polypharmacy, the present study revealed that, majority of the studied older adults agreed with feeling having a large amount of medication, not agree with feeling comfort with the number of their medications. This result may be due to prescription of too many medications by multiple healthcare providers for managing disease process with or without coordination. Similar result was reported

by the study done in Australia by Gillespie et al., (2019)²⁷ and a study done by Reeve et al., (2018)²⁸ in the United Stated.

Moreover the present study revealed that, majority of the studied older adults, agree with believing in their medication necessity and agreed with willing to stop one or more of their regular medication if the doctor said. This result may be justified as, Egyptian believes of medication as core of disease management, with or without prescription and respecting doctor orders. The same finding reported by Gillespie et al., (2019)²⁷ in Australia, which revealed that majority of the studied older adults believe that their medication is necessary and a study done by Gillespie et al., (2019)²⁷ in Australia, revealed that majority of the studied older adults agreed with willing to stop one or more of their regular medication. Also, majority of the studied older adults agree with reducing the number of their medications. This result may be justified as, economical concerns as majority of older adults reported that their income was not. This result is in line with the study done by Gillespie et al., (2019)²⁷ in Australia.

Moreover, the present study showed that, majority of the studied older adults not agree with feeling that they took one or more medications that no longer needed. This result may be attributed to believe of the majority of studied older adults that their medication is necessary. This result is in accordance with a study done by Gillespie et al., (2019)²⁷ in Australia.

In addition, the present study revealed that majority of older adults would accept taking more medication for their health condition. This result may be justified as, Egyptian believes that medications were the only way for disease management. This result in agreement with a study done by Gillespie et al., (2019)²⁷ in Australia. About half of older adults not agreed with understanding the reason of prescription of each medication in the current study. This result may be justified as, limited communication between older adults and their physician about treatment plan related to limited time of physicians. In contrast with this result, a study done by Gillespie et al., (2019)²⁷ in Australia revealed that the majority of older adults agreed with understanding the reason of prescription of each medication.

Furthermore, the present study revealed that majority of older adults would to stop one or more of their medication to pay fewer. This result may be justified as, majority of adults' patients' income weren't enough and they had financial concerns affect their decision making towards their own

medication. Similar result reported by Kalogianis et al., (2016)²⁹ in Australia. Also, the present study revealed that majority of the studied older adults believe that one or more of their medication giving them side effects. This result may be justified as, age related pharmacokinetic and pharmacodynamics changes that affect absorption, metabolism and excretion of medication. In contrast with this result, a study done by Gillespie et al., (2019)²⁷ in Australia, showed that the majority of older adult patients not agreed that their medications were giving them side effects.

Additionally, majority of the studied older adults tried to stop their regular medication. This result may be justified as, majority of older adults not feeling comfort with the number of their medication, also related to economical concerns as their income weren't enough. In contrast, a study done by Gillespie et al., (2019)²⁷ in Australia, revealed that the majority of older adult patients not tried to stop their medication.

Moreover, all the studied older adults considered that (5-9) tablets or capsules per day would to be lot. This result may be justified as, aging process affect swallowing process which made difficulty of intake of medication orally, although, the study done by Gillespie et al., (2019)²⁷ in Australia revealed that a greater proportion considering that 10–14 was 'a lot'.

The majority of the studied older adult would be comfort to take (4) tablets or capsules. This result may be justified as the studied older adults chose the fewest numbers of pills affected by difficulty in swallowing related to aging process. Congruent with this results, the study done by Reeve et al., (2018)²⁸ in the United States revealed that the maximum number of pills that older adult would be comfort were (4) pills. In contrast, the study done by Gillespie et al., (2019)²⁷ in Australia revealed that majority would be comfortable taking ≤eight medications per day.

The majority of the studied older adults were feeling discomfort with involvement of pharmacist in medication follow. This result may be justified as, majority of older adults suffered from chronic diseases which need a medical intervention and coordination of specialists. Agreed with this result a study by Gillespie et al., (2019)²⁷.

Moreover, majority of the studied older adults follow up their stooped medication by taking a face to face appointment. This result may be justified as, emotional and verbal assurance by physician positively affect older adults on follow

up. Similar result reported by Schiotz et al., (2018)³⁰ in Denmark.

As regards Relationship between the study variables, the present study showed that knowledge score was affected by several factors in terms including age, sex, education level, In accordance with this result a study done by Mekonnen & Gelayee., (2020)²⁴ in Ethiopia. Also, there is no statistical significant relation was found between willing to deprescribe and older adult age, older adults' sex and number of chronic diseases. In accordance with this result, a study done in Italy by Galazzi et al., (2016)⁹. In addition, there is a statistical significant relation between willing to deprescribe and total number of medications, In accordance with this study, a study done in Italy by Galazzi et al., (2016)⁹.

In this light, these findings provide a framework for thinking about ways to maximize quality of prescribing medication in older people. In particular, the prevalence of medications that were unnecessary, not indicated, therapeutically duplicative suggesting that greater attention to geriatric prescribing principles and provide education on those principles will be useful for this population.

6. Conclusion

Based on the results of the present study, it can be concluded that, knowledge of older adults with polypharmacy about their medications was low insufficient. Studied older adults with polypharmacy not feeling comfort with their medication and want to decrease the number of prescriptions. knowledge score was affected by several factors in terms including age, sex, education level, there is a statistical significant relation between willing to deprescribe and total number of medications.

7. Recommendations

- Designing an educational program for improving understanding of the pharmacotherapy should be implemented with the use of designs, colors and symbols to improve older adults' knowledge and attitude about pharmacotherapy.
- Implementation of a structured coordinated educational program for care givers related to problems facing older adults during medication implementation process for effective coordination.

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More than one answer

9. References

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