

Knowledge and Burden regarding Medication among Geriatric Patients at Sohag University Hospital

Randa Mohammed Alarby¹, Hanan Abdallah Abo Zeid² & Esteer Ibrahim Ghayth³

¹ Demonstrator of Gerontological Nursing, Faculty of Nursing, Sohag University, Egypt.

² Assistant Professor of Gerontological Nursing, Faculty of Nursing, Assiut University, Egypt.

³ Lecturer of Gerontological Nursing, Faculty of Nursing, Sohag University, Egypt.

Abstract:

Background: Medication burden is a more common problem among geriatric patients because the presence of chronic diseases due to the use of multiple medications. **Aim:** To assess the level of knowledge and burden regarding medication among geriatric patients. **Design:** A descriptive research design was used. **Setting:** The study carried out at outpatients clinics at Sohag university hospital. **Sample:** 245 geriatric patients included in the study. **Tools:** Three tools were used: **Tool I:** Demographic and medical data, **tool II:** Medication Knowledge Assessment Questionnaire, and **tool III:** Living with Medicines Questionnaire. **Results:** The results revealed that 56.3% of studied geriatric patients had poor knowledge related to medications they have taken, 40% of them had high medication burden, there was negative correlation between knowledge about medication and medication burden. **Conclusion:** Elderly patients level of knowledge regarding their medications were poor in addition to most of them were between high to moderate medication burden. **Recommendation:** Minimize the number of prescribed medications by keeping the dosing schedule as simple as possible, and limit the number of medication changes and designing health education programs for elderly patients and their caregivers regarding their medications to increase their knowledge and decrease medication burden.

Keywords: Geriatric patients, knowledge & Medication burden.

Introduction

Understanding the problems, requirements, and illnesses associated with aging is vital for society because it is a crucial time in human life. (Kalstad et al., 2021) People 65 years of age and older are considered elderly by the World Health Organization (WHO), and many elderly people reside in underdeveloped nations, due to advancements in healthcare and therapy, the number of elderly people worldwide is growing; this trend is known as the "demographic revolution." (Rajati et al., 2023). According to WHO estimates, there will be 727 million older people in the world by 2020, and by 2050, there will likely be over 1.5 billion. (Michel et al., 2021)

In Egypt, the latest census by the Central Agency for Public Mobilization and Statistics showed that there are 6.9 million elderly people (aged 60 or over), representing 6.6 percent of the total population. (Central Agency for Public Mobilization., 2023)

Although elderly is not a disease, it has been found that more than 80 % of the elderly suffer from one or more disorders or diseases that cause various physical, psychological, social, and economic problems for the elderly (Kalstad et al., 2021). The elderly population growth is associated with increased prevalence of diseases and dependence in activities of daily living (Rajati et al., 2023).

The global population is aging, which is linked to an increase in multimorbidity and an increase in the burden of medications. (Al Bulushi et al., 2023). Medication is recommended in geriatric medicine to treat chronic illnesses, reduce pain, and enhance quality of life. There is a greater chance of medication-related issues or side effects with increased medication use on the other hand. (Teo et al., 2020).

In elderly persons, complicated medicine combinations can be dangerous. Adverse medication events and interactions are more likely in older persons due to pharmacodynamic and pharmacokinetic alterations. (Maher et al., 2020).

In addition to reflecting the patient's attitude, willingness, and capacity to manage prescription use, medication load is a major element influencing a patient's perceptions regarding medication adherence and health status. (Wang., 2021).

The burden of medication was defined as adjusting to the difficulties of having a large number of medications; managing the inconvenience and conflicts of medications; and devising coping mechanisms for routine-related problems. In addition to having a higher risk of negative drug reactions, elderly persons have a higher burden of illness for which prescription drugs are written. (Alqallaf et al., 2022).

The burden of using many medications is increased by diminished functional capacity, which is linked to a striking reduction in the ability to conduct instrumental activities of daily life, as well as diminished physical functioning. (Alqallaf et al., 2022)

The body's tissues, cells, and organs are all impacted by the physiological deterioration that comes with age. (Soto-Perez-de-Celis et al., 2018) This consequently affects how well the body absorbs and processes drugs. As a result, the way a medicine works in an older person may differ from how it works in a younger one. An example for explanation, the liver capacity might drop by 70% in the elderly, which affects how well the body metabolizes medications. Additionally, renal function declines in the elderly, which affects the body's ability to eliminate medications. (Drenth-van Maanen et al., 2020).

Reduced renal mass, blood flow, tubular secretion/reabsorption, and estimated glomerular filtration rate (eGFR) are all linked to aging, as is an increase in renal disorders that compromise renal function. Renally cleared medications are less cleared, and this increases exposure to risk of adverse drug reactions (ADRs). (Juan et al., 2022)

Various morbidity, physical and mental health conditions, various prescribers, and prescribing "cascades" are common causes of multiple medication use. (Wastesson et al., 2018)

Nurses' roles in pharmaceutical care have been defined as including assessing medication use and variables that may hamper it (e.g., medication beliefs), promoting patient self-management, and facilitating the transition of care coordination, to guarantee that patients receive continuous pharmaceutical care, it is the duty of the healthcare team-including nurses-to give patients the information they need about their medications. Before sending patients home, nurses should evaluate their needs, educate them (via coaching, counseling, and patient education), support them, and give them a sense of empowerment. Nonetheless, discharge planning isn't usually done well. Therefore, our hypothesis is that patients' perceptions of medications are influenced by discharge management. (Mortelmans et al., 2022).

Nurses are crucial. Three characteristics of the role of nurses in transitional care medication management were found by an integrated review: Implementing medication reconciliation, working with other medical professionals, and providing assistance to patients are the first three priorities. (Cheng et al., 2023)

Significance of study:

Over-The Counter pharmaceuticals are taken into account, 53.6% of patients 65 years of age or older were taking five or more medications, which can result in a medication burden. (Aljawadi, et al., 2022).

Numerous studies have evaluated the prevalence of multiple drug use among the older population. The range seen in industrialized countries was between (39%) and (45%), an Egyptian study calculated that in rural villages, it was 56%, while in Benha, it was 85.3 %. (Eltaher & Araby 2019).

The health care system is estimated to spend \$50 billion USD a year on multiple drug use, while the elderly are estimated to spend \$1.35 billion USD a year on needless medicine use. A \$1 billion USD yearly cost is associated with outpatient adverse drug events (ADEs), which account for 33% of all ADEs. Among the elderly, 23% reported having trouble affording their prescription, and 21% skipped doses due to cost. Eliminating potentially harmful prescriptions can save each person \$153.46, with the number of elderly people anticipated to increase to 98 million by 2060. (Maness 2023).

Elderly individuals with chronic illnesses frequently experience long-term medication issues, which significantly lowers their quality of life. Patients' medication burden has a significant impact on their medication-related beliefs, actions, and health outcomes. (Wang ., 2021).

Pharmacotherapy is complex and difficult in the elderly due to many chronic diseases and age-related physiological changes that impact the pharmacodynamics and pharmacokinetic properties of medications. (Roman et al., 2020).

Aim of study:

The current study aimed to assess the level of knowledge and burden regarding medications among geriatric patients.

Research questions:

In order to address the study purpose, the following study question was formulated:

1. What is the level of geriatric patient's knowledge regarding medication taken?
2. What is the medication burden of geriatric patients?
3. Is there a relation between the studied geriatric patient's level of knowledge about medication they have taken and socio-demographic data?
4. Is there correlation between knowledge about medication and medication burden?

Subjects and Method:

Research design:

Descriptive research design was used in this study.

Setting:

The study carried out at outpatients clinics of Sohag university hospital where located in the urban setting of the small city of Nasser City , Sohag governorate, 82511, that included (urology clinic, heart and chest clinic, internal medical clinic, neurology clinic and orthopedic clinic); there is one to two physicians and one nurse at each outpatients clinic and high flow rate from elderly patients to this clinics with acceptable price compared with private outpatients clinics or hospitals.

Study subjects:

The geriatric patients aged 60 years and more attending the previous mentioned setting.

Inclusion criteria:

1. The elderly patients are 60 years and above.
2. The elderly patients with chronic diseases.
3. Able to communicate and agree to participate in the study.
4. The elderly patients not have any cognitive impairment or psychiatric disorders.

Sample size:

The sample size was calculated using the EPI info 2000 statistical package. The calculation was done using the expected frequency of good knowledge from previous studies using 95% confidence interval, 80% power of the study, 84.2% good knowledge and worst acceptable result 5%. The sample size calculated according to the above criteria was 204 participants which increased to 245 by adding 20% to safeguard against non- response and dropout.

Tools of the study:

It included three tools: Tool (I): socio-demographic and medical data: to assess personal data and medical history of geriatric patients: It consist of two parts:

Part (1): personal data of geriatric patients it consist of 6 items such as: (age, sex, marital status, level of education, residence, the caregiver).

Part (2): Medical history which included: (presence of chronic disease, number of medication, use of Over-the-counter medicine" OTC").

Tool (II): Medication Knowledge Assessment Questionnaire:

It was designed by (Mahendra Kumar, et al., 2008)

To assess geriatric patients knowledge towards medication use, The questionnaire contained a total of ten questions, which a patient had to know prior to use of the medications.

Scoring system of Medication Knowledge Assessment Questionnaire: depending on the response each question is equal to one degree if the geriatric patient answer correctly and zero if the patient choose wrong answer; the patient who will answer all the questions correctly will get maximum

points. Then the total score categorized into 3 groups: Poor knowledge (0<5), Good knowledge (5<7), Excellent knowledge (7-10) (Gangwar, et al., 2013).

Tool (III): Living with Medicines Questionnaire version 3 (LMQ-3) it was developed by (Katusiime et al., 2018): To measure the medication burden of long-term use of multiple medication conceptualized as medicine burden, The instrument consists of 41 statements accompanied by. Eight domains were identified through factor analysis, relating to: perceptions about effectiveness (6items, as, my medicines live up to my expectation.), concerns about medicine use(7items, as, I am concerned about possible damaging long-term effects of taking medicines), patient-provider relationships and communication about medicines(5items, as, my doctor (s) take my concerns about side effects seriously), practical difficulties (7items, as, I find getting my prescriptions from the doctor difficult), interferences to daily life (6items, as, my medicines interfere with my social relationships), autonomy/control over medicine (3items, as, I can choose whether or not to take my medicines), side effects (4items, as, the side effects I get from my medicines adversely affect my well-being), and cost related burden (3items, as, I worry about paying for my medicines), all areas which have been cited by users of long-term medicines as burdensome.

Scoring system:

The scale has 5-point Likert-type scoring system ranging from one to five starting from strongly agree to strongly disagree for some statements (from 1=strongly agree to 5= strongly disagree) and starting from strongly disagree to strongly agree for some statements (from 1=strongly disagree to 5= strongly agree). **Categorized into: low burden** = <50% (41-103 scores), **moderate burden**= 50 %< 70% (103-143 scores), **high burden**= 70%-100% (144-205 scores).

Validity of tools:-

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)

Reliability of tools:

Tool II and III (Medication Knowledge Assessment Questionnaire and Living with medications Questionnaire) was translated by the investigator into Arabic language. The reliability of tool II, III were assured by means of **Cronbach's Alpha** (α) = 0.867, (α) =0.776 respectively

Data collection:**Administrative phase**

An official letter of approval was be obtained from the Dean of the faculty of nursing at Sohag University to director of Sohag University Hospital. This letter

included permission to carry out the study and explained the purpose and the nature of the study.

Pilot study:

The pilot study was carried out before starting data collection on 10% of the sample who included in the study to examine the clarity of questions and time needed to complete the study tools. Based on the results, no modifications were done so the pilot study sample were included in the total sample of the study.

Ethical considerations:

Ethical approval was taken from the Research Ethics Committee of the Faculty of Nursing - Assiut University. Geriatric 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.

Field of work:

- Data were collected in six months from the beginning of March to the end of August 2023.
- Before meeting the geriatric patients, the investigator met the staff of outpatients clinics, introduce herself and explaining the purpose of the

study. The investigator introduce the agreement letters of the director of hospital, asking of their permission for data collection in the clinics. Also she asked for support from nurses as well as the agreement with elderly patients.

- The investigator met the geriatric patients in the waiting hall of the outpatients clinics. Introduce herself and the purpose of the study she asked the geriatric patients to participate in the study after assuring the confidentiality of their data. The time was needed to fill the questionnaire (about 15 to 20 minutes) depending on their understanding and response.

The investigator attended three days per week; (3 – 4) sheets were completed every day where the investigator met 4 patients per day for sheet completing.

Statistical analysis:

Data entry and data analysis were done using SPSS version 22 (Statistical Package for Social Science). Data were presented as number, percentage, mean, and standard deviation. Chi-square test was used to compare between qualitative variables. Pearson correlation was done to measure correlation between quantitative variables. P-value considered statistically significant when $P < 0.05$.

Results:

Table (1): Distribution of the studied geriatric patient's demographic data (No=245, 2023)

Personal data	No. (245)	%
Age: (years)		
< 70	133	54.3%
≥ 70	112	45.7%
Mean ± SD (Range)	70.30 ± 6.71 (61.0-93.0)	
Sex:		
Male	111	45.3%
Female	134	54.7%
Educational level:		
Illiterate	153	62.4%
Literate	92	37.6%
Marital status:		
Single	4	1.6%
Married	142	58.0%
Widow	90	36.7%
Divorced	9	3.7%
Residence:		
Urban	101	41.2%
Rural	144	58.8%
The caregiver of geriatric patients:		
By himself	29	11.8%
Husband/ wife	95	38.8%
One of the sons	119	48.6%
Others (Daughter-in-law - brother's wife)	2	0.8%

Table (2): Distribution of geriatric patients according to medical history (No=245, 2023)

Medical history	No. (245)	%
Suffering from any chronic diseases (#)		
Hypertension	227	92.7%
Diabetes mellitus	178	72.7%
Heart diseases	102	41.6%
Renal diseases	39	15.9%
Osteoarthritis	160	65.3%
Liver diseases	18	7.3%
Asthma	6	2.4%
Number of medications have you taken		
1 - 4	23	9.4%
≥5	222	90.6%
The over counter medication		
Yes	203	82.9%
No	42	17.1%

*(#): more than one answer was allowed

Table (3): Distribution of study subjects according to their level of knowledge about medication that they have taken (N=245, 2023)

Level of knowledge about medication	No. (245)	%
The name of your medication.		
Incorrect	226	92.2%
Correct	19	7.8%
Identify the medication.		
Incorrect	86	35.1%
Correct	159	64.9%
The indication for the medication.		
Incorrect	170	69.4%
Correct	75	30.6%
The timings of the medication and directions.		
Incorrect	173	70.6%
Correct	72	29.4%
The dose of the medication.		
Incorrect	172	70.2%
Correct	73	29.8%
Long you have to take the medication.		
Incorrect	108	44.1%
Correct	137	55.9%
Food/ medications you have to avoid while taking the medication.		
Incorrect	245	100%
Correct	0	0.00%
Name one major side effect of the medication?		
Incorrect	184	75.1%
Correct	61	24.9%
The action when you miss the dose.		
Incorrect	165	67.3%
Correct	80	32.7%
Rout of storing the drugs.		
Incorrect	138	56.3%
Correct	107	43.7%

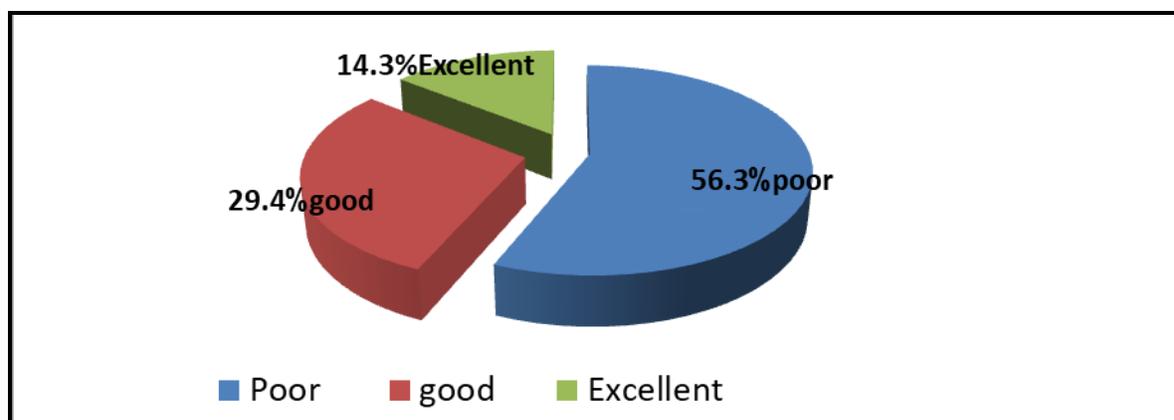


Figure (1): Total scores of the studied geriatric patients knowledge level about medications that they have taken.

Table (4): Relation between the studied geriatric patient's level of knowledge about medication they have taken and socio-demographic data

Socio-demographic data	Total scores of knowledge level about medication taken						P-value
	Poor		Good		Excellent		
	No.	%	No.	%	No.	%	
Age: (years)							
< 70	52	39.1	52	39.1	29	21.8	0.000*
≥ 70	86	76.8	20	17.9	6	5.4	
Sex:							
Male	59	53.2	33	29.7	19	17.1	0.470
Female	79	59.0	39	29.1	16	11.9	
Educational level:							
Illiterate	95	62.1	42	27.5	16	10.5	0.029*
Literate	43	46.7	30	32.6	19	20.7	
Marital status:							
Married	72	50.7	44	31.0	26	18.3	0.049*
Not married	66	64.1	28	27.2	9	8.7	
Residence:							
Urban	56	55.4	31	30.7	14	13.9	0.930
Rural	82	56.9	41	28.5	21	14.6	

* a statistical significance ($P < 0.005$)

- chi-square test

Table (5): Total scores of the studied geriatric patients according to level of medication burden

Medications burden	No. (245)	%
High burden	98	40.0%
Middle burden	108	44.1%
Low burden	39	15.9%

Table (6): Correlation between living with medications score (medication burden) and knowledge score about medication

	Living with medications score (medication burden level)	
	r-value	P-value
Knowledge score about medication	-0.447	0.000*

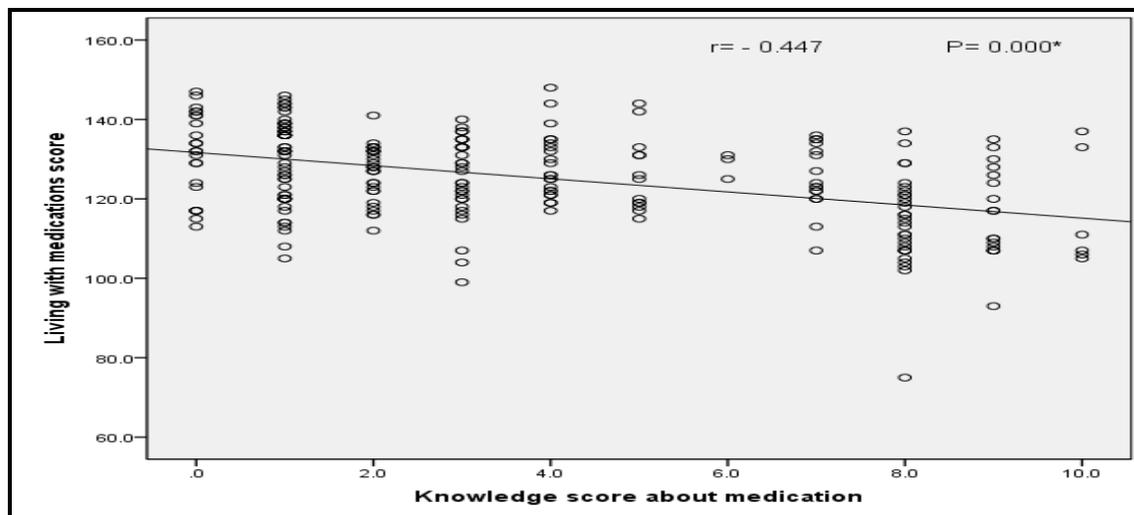


Figure (2): Correlation between living with medications score (medication burden) and knowledge score about medication

Table (1): Described the distribution of geriatric patients according to their demographic characteristics. The age of the studied older adults ranged from 61 to 93 years with Mean \pm SD 70.30 ± 6.71 , (54.3%) patients aged less than 70 years; while (45.7%) of them were more than 70 years, it was noticed that female more prevalent (54.7%) than males, (58%) of the studied older adults were married, Regarding educational level it was noticed that (62.4%) of them were illiterate, additionally (58.8%) of the study older adults were residing in rural areas.

Table (2): Showed that, (92.7%, 72.7% and 65.3%) of studied geriatric patients were suffering from hypertension, Diabetes mellitus and Osteoarthritis respectively, regarding number of medication it was noticed that (84.1%) were taking from 5 to 9 medication per day in the last six months, while (82.9%) of them were using medications without consulting a doctor (use of Over- The – Counter medicine "OTC")

Table (3): Distribution of studied geriatric patients according to their level of knowledge about their medication they had taken; shows that, (92.2%) of older adults did not know their medication name, while (64.9%) of them could identify their medication. it was observed that (69.4%) of them did not know why they are taking their medication, (70.6%) did not know the timings of their medications, it also noticed that the majority of them (98.8%) did not know food\medication should be avoided with their medication, while (75.1%) of them were not knowing side effects that may take place from their medication.

Figure (1): Exhibits geriatric patients level of knowledge about medications that they have taken;

Showed that, 56.3% of study subjects had poor level of knowledge about their medication, while 29.4% of them had good knowledge and only 14.3% had excellent knowledge.

Table (4): Showed a statistical significance difference between the studied subjects level of knowledge about their medication and age, educational level, marital status and job before retirement with p value (0.000*, 0.029*, 0.049*, 0.036*) respectively.

Table (5): Demonstrate that, (44.1%) of studied geriatric patients had moderate medications burden, while (40.0%) of them had highly medication burden and only (15.9%) of them had low burden from medication.

Table (6): Shows the relation between knowledge and burden of medications of studied geriatric patients. It was observed that the medication burden of patients was statistically significantly higher among those who had poor knowledge regarding their medications at a p- value of 0.000*

Figure (2): Clarifies that Correlation between living with medications score (medication burden) and knowledge score about medication; it was observed that there were negative correlation ($r=0.447$) and highly statistical significant p value ($p=0.000^*$) between knowledge score about medication and living with medications score.

Discussion:

The elderly population suffers from chronic diseases and multimorbidity and is treated with an increasing number of drugs that result in medication burden **Mohamed et al., 2022 & Wastesson, et al., (2019).**

The current study showed that the percentage of females was more than the percentage of males. This

result may be due to, females were suffering from multiple chronic diseases than males which increase number of medications. Females were the most frequent visitors to the outpatient clinics of the University Hospital. This result agrees with study done in Egypt by **Metwaly & Aly., (2020)** who studied Prevalence of Polypharmacy among Egyptian Patients with Type 2 Diabetes Mellitus, they found that multiple medication use was higher in females than males also these findings agree with study done in Córdoba, Spain by **Cebrino & Portero., (2023)** who studied Polypharmacy and associated factors: a gender perspective in the elderly Spanish population they reported that, The prevalence of multiple medication use in women was higher (28.1%) than in men (17.2%) ($p < 0.001$).

Regarding the marital status, most of the studied geriatric patients, were married. According to Egyptians cultural, marriage achieves social and sexual human satisfaction according to religiously and legally. This result agrees with study done in Egypt by **Metwaly & Aly., (2020)**, and the study done in Denmark by **Jørring Pallesen., (2022)** who studied Polypharmacy occurrence and the related risk of premature death among older adults in Denmark. In contrast, study done in Egypt by **Abd Allah et al., (2021)** who studied Factors Affecting Medication Adherence among Elderly in Rural Areas, Sharkia Governorate, Egypt, they demonstrated that half of the studied older adults were married and half of them were widows.

Regarding educational level, around two thirds of the studied geriatric patients were illiterate. This result may be due to the community was discourage the education in the past specially females. This result is in agreement with, a study done in Egypt by **Abd Allah et al., (2021)** they found that, around two thirds of the studied older adults were illiterate. In contrast the study done in Singapore by **Tan et al., (2019)** who studied Polypharmacy among community-dwelling elderly in Singapore: Prevalence, risk factors and association with medication non-adherence, the results showed that, percent of no formal education was 27.9%, primary 36.1% and secondary 36% in addition to study done in Indonesia by **Faisal et al., (2023)** who studied Prevalence and Predictors of Excessive Polypharmacy in Geriatric Inpatients. they showed that, no School 1%, School 87.2%, University 11.7%. Additionally study done in Kuwait by **Badawy et al., (2020)** who studied Prevalence and risk of polypharmacy among community-dwelling, elderly Kuwaiti patients, they reported that Fifty-six percent of the patients had an education level below secondary school, and 44% had finished secondary school or higher.

The present study showed that, around one half of the studied geriatric patients had one of their sons as caregiver. This result is in the same line with the study done in Assiut by **Mahmoud et al., (2023)** who studied Relation between Caregivers Knowledge, Burden and Coping Strategies toward Elderly Patients with Liver Cirrhosis in Al-Rajhy Liver Hospital at Assiut University, revealed that three-quarters of the studied caregivers were sons or daughters.

In relation to the sample distribution regarding the medical history of the subjects, the current study illustrated that, the majority of the studied geriatric patients suffer from hypertension, diabetes multiuse and Osteoarthritis respectively. This result is supported by a study done in India by **Chaudhari & Chaudhary., (2022)** who studied Association of Chronic Illness and Prevalence of Polypharmacy among Older Patients, they revealed that more than half of the studied geriatric patients suffering from hypertension.

The current study revealed that less common diseases was asthma. This result similar to study done in Egypt by **Hassan et al., (2021)** who studied Control Poly-Pharmacy: Elderly Patients' Practices, reported that, the least reported diseases were respiratory problems.

The current study revealed that, the majority (90.6%) of studied geriatric patients took from 5 and more medications per day. This result may be contributed to older people may have been taking multiple medicine for long period due to multiple chronic diseases. Similar result reported by **Chaudhari & Chaudhary., (2022)** they showed that multiple medication use was found in more than 80% respondents. In contrast study done in Singapore by **Tan et al., (2019)** showed that, weighted prevalence of multiple medication use among community dwelling elderly Singaporeans was 14.5%.

Self-medication with OTC drugs is a practice that represents a public health problem worldwide (**Akande-Sholabi & Akinyemi, 2023**). The prevalence of self-medication varies by country and target population, and ranges from 11.2% to 93.7% (**Akande-Sholabi et al., 2021**). The present study revealed that, most of studied older adults was self-medicated. This result may be due to use of non-prescribed medications is common among geriatric patients community if side effects of basic medications occur, increase illiteracy and decrease health education about side effects. Similar results reported by **Akande-Sholabi & Akinyemi., (2023)** who studied Self-medication with over-the-counter drugs among consumers: a cross-sectional survey in a Southwestern State in Nigeria. Showed that, the prevalence of self-medication was 85.4%.

The present study revealed that the majority of the studied elderly subjects did not know the name of

their medication. these finding may be due to two thirds of study subjects were illiterate and medications were provided to most of them by their relative and only minimal present caring by themselves. This results is in agreement with study of **Reis et al., (2016)** who studied "An evaluation of elderly people's understanding of pharmacotherapy among those treated in the primary healthcare system in Belo Horizonte, Brazil" in prazil showed that low percentage of sample knew their medication name. In contrast with study done in Ethiopia by **Mekonnen & Gelyee., (2020)** who studied " low medication knowledge and adherence to oral chronic medications among patients Attending community pharmacies" showed that more than half of participants, knew their medication name.

As regard to elderly patients knowledge about indications of their medications, it was observed that more than two thirds of studied elderly subjects did not know the action of drug. This result may be due to use of multiple medications resulting in inability of elderly patients to know action of every drug and lack of communication between patients and their physician and lack of instructions provided by physicians . These finding is in agreement with study done by **sancer et al., (2011)** in turkey showed that more than half of the patients (54.8%) did not know reason they were taking drugs. In contrast with result done in Ethiopia by **Mekonnen & Gelyee., (2020)** reported that, 54.2% knew the reasons for taking the medications also study done by **Gangwar., (2013)** who studied Determination of geriatric patient's drug profile and identify their pharmaceutical care requirements by determining potential risk factors, showed that most of study older adults reported the indication of their medication.

The current study revealed that more than two third of the studied geriatric patients did not know time of taking their medication; these results may be due to older adults participants depend upon their relatives to take their medication. This result is in agree with, the study done by **sancer et al., (2011)** who studied Determination of geriatric patients' drug profile and identify their pharmaceutical care requirements by determining potential risk factors, they showed that, more than half of older adults (60.3%) did not know the timing of their medication, this study disagree with study of **Gangwar et al., (2013)** they revealed that, around half of study subjects understood dosing frequency.

Concerning duration of the studied elderly subjects of taking medication revealed that more than half of studied geriatric participants knew duration of their medication this may because of the presence of chronic diseases that demand taking drugs forever. these findings disagreement with study of **Gangwer**

et al., (2013) who studied Determination of geriatric patient's drug profile and identify their pharmaceutical care requirements by determining potential risk factors revealed that around two thirds of study subjects did not knew duration of their medication.

Regarding side effects of medication, showed that three quarters of the studied elderly subjects did not knew side effects that their medication may cause. This may contributed to low level of education in around two thirds of studied elderly subjects and presence of more than one disease make patients believe that any problem occur is due to disease not side effect of medication. , these study supported by the study of **Rais et al., (2016)** who studied "An evaluation of elderly people's understanding of pharmacotherapy among those treated in the primary healthcare system in Belo Horizonte, Brazil", they showed that low percentage of study subjects reported possible side effects.

The present study showed two thirds of studied elderly participants did not take correct action when miss their dose of medication because they have limited knowledge about danger of missing or neglecting to take medication. This findings is in contrast with study reported by **Gangwar et al., (2013)** who studied Determination of geriatric patient's drug profile and identify their pharmaceutical care requirements by determining potential risk factors in India they revealed that, the majority the studied older adults took a positive action if they miss a dose of their medication.

The current study showed that, more than half of the studied geriatric patients had poor knowledge about their medications. This result may be due to lack of instructions and information that should be provided by physician about medications and treatment plan also age related changes regarding memory that lead to difficult to remember. This result is in accordance with; a study done in Iraq by **Salih& Ismail., (2022)** who studied Elderly patients' adherence, knowledge and belief to medications in primary healthcare centers in Baghdad they showed that, 76.6% of patients had low knowledge about medication.

Regarding medication burden, the present study revealed that, most of studied geriatric patients had moderate to high medication burden. This result may be due to lack of awareness of side effects and economic problems. This study is in agreement with study done in china by **Wang et al., 2021** who studied Exploring polypharmacy burden among elderly patients with chronic diseases in Chinese community showed that, a relatively heavy burden of multiple medications is imposed on elderly patients diagnosed with chronic diseases in China

Concerning the correlation between the elderly patient's level of knowledge about medication and living with medication (that determine medication burden level). The current study pointed that total level of knowledge were negatively correlated with living with medication (that measure medication burden level). This result can be due to the fact that elderly patients with low level of knowledge about medication resulting in high level of medication burden.

Conclusion:

Based on the results of the present study, it can be concluded that, knowledge of older adults about medication used was poor. Most of the Studied older adults suffering from moderate to high medication burden. Knowledge score about medication used was affected by several factors including age, education level and marital status and there is a statistical significant relation between them and knowledge level about medication. Finally there was negative correlation between medication burden and knowledge level about medication used.

Recommendations:

Recommendations related to patients:

Minimize the number of prescribed medications by keeping the dosing schedule as simple as possible, and limit the number of medication changes, not taking medications based on personal, family or community recommendations and do not stop medication without the doctor's approval, even if it is a lot.

Recommendations related to health care services and researchers:

Accessible interventions to decrease medications use by de-prescribing or other interventions are needed to decrease the increasing trend of polypharmacy in the geriatric population as designing health education programs for geriatric patients and their caregivers to increase knowledge regarding their medications and decreasing medication burden.

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