

Poly-Pharmacy among Elderly Patients: Perception and Practices

Mohamed Elsayed Aboudonya¹, Soheir badr Elden², Sameer Hamdi³, Hanan Elzeblawy Hassan^{4*}

¹Nursing science teaching specialist in Technical Health Institute of Imbaba, Egypt

²Professor of Community Health Nursing, Faculty of Nursing, Cairo University, Egypt

³Lecturer of Community Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt

⁴Maternal and Newborn Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt

ABSTRACT

Background: Poly-pharmacy can worsen frailty, a term that refers to the collection of health problems an older adult may face. This includes delirium and cognitive impairment, falls, and decreased functional ability. Poly-pharmacy has also been documented as a major risk factor for adverse drug reactions in the developed countries.

Aim of the study: The study aims to assess of knowledge and practices regarding Poly-pharmacy among old-age patients.

Design: Descriptive cross-sectional study design was used.

Subjects & Setting: convenient sample consisted of 114 elderly patients visiting outpatient clinics affiliated to Beni-Suef university hospital.

Tools: (1) an interview questionnaire to assess geriatric patient's Poly-pharmacy knowledge; (2) A checklist to assess poly pharmacies' alternative practices.

Results: two-thirds of the study sample (66.7%) was taking medication based on their previous experience, 57% depended on the pharmacist's prescription, 44.7% took medication based on the experience of a family member, 32.5 % are aware of the meaning of Poly-pharmacy while 23.7% are aware of the Poly-pharmacy contributing factors.

Conclusion: The prevalence of Poly-pharmacy and its consequences among the elderly is significantly consequent to the level of education.

Recommended: Designing an educational program for the elderly to increase their awareness and knowledge about the phenomenon of drug abuse and its consequences.

Keywords: Poly-pharmacy, Old age, life style, Practices

Introduction

Demographics of the population have been changed globally over recent years with increasing life expectancy proportion of elderly people. The WHO has predicted that the number of older people (65 years and older is the traditional definition) worldwide will reach 1.5 billion by 2050 [1].

Poly-pharmacy can worsen frailty, a term that refers to the collection of health problems an older adult may face. This includes delirium and cognitive impairment, falls, and decreased functional ability. Poly-pharmacy has also been documented

as a major risk factor for Adverse drug reactions (ADRs) in the developed countries. In a case-control study carried out among old-age people, Poly-pharmacy was found to be an independent risk factor for hip fractures [2,3].

It is documented that there is a relationship between aging and co-morbidities. Multi-morbidity is commonly defined as the co-existence of two or more chronic health conditions which is common in the older population. The presence of multiple chronic conditions increases the complexity of therapeutic management for both health professionals and patients and impacts negatively on health outcomes. Multi-morbidity is linked to lower quality of life, self-rated health, mobility, and functional capacity, as well as more hospitalizations, physiological discomfort, health-care resource utilization, death, and expenditures. Globally, the health burden of multi-morbidity is expected to rise significantly as a result of the growing number of older people and increasing numbers of people living with multi-morbidity [4].

The elderly are more prone to chronic illnesses due to aging and physiological changes; with older people (up to about 80%) suffering from chronic illnesses. As a result, this group

***Correspondence:** Hanan Elzeblawy Hassan, Maternal and Newborn Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt Tel: , E-mail: nona_nano_1712@yahoo.com

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is more prone than the overall population to use drugs more often. Geographic variations and/or changes in medicine usage through time cause medical, social, and economical changes at the individual and societal levels, and there is a need to detect, explain, and correct these pharmaco-epidemiological disparities. [5] Chronic illnesses and aging: Chronic diseases may have a significant effect on the health and quality of life of senior citizens, not to mention the financial burden that comes with long-term sickness [6].

Chronic illnesses that affect the elderly include diabetes, arthritis, and other ailments. The reality is that the majority of these illnesses and ailments are curable and should be discussed with a doctor. Adult-onset diabetes, Arthritis, Kidney and bladder issues, Dementia, Parkinson's disease, Glaucoma, Lung disease, Cataracts, Osteoporosis, Enlarged prostate, Alzheimer's disease, Macular degeneration, Depression, Cardiovascular disease are the most common chronic diseases afflicting the elderly, according to the American Society of Consultant Pharmacists [7].

Pharmacology Cumulative effects might result from therapeutic duplications from the same pharmacological class. Drugs from several pharmacological groups may have similar side effect profiles, which increases the likelihood of negative side effects.

Using herbal supplements to self-treat common ailments should be avoided when using certain types of medications [8].

Even though medicines are given to treat particular illnesses and comorbidities, Poly-pharmacy is connected with negative patient outcomes and societal costs. Poly-pharmacy has been linked to a 30% rise in medical expenditures, according to research. Taking several medications also raises the chance of negative side effects and drug interactions. An adverse medication response will occur in around 40% of hospitalized older individuals. According to research, older individuals who used 5-9 medications had a 50% chance of drug interaction, which rose to 100% for those who took more than 20 drugs. Poly-pharmacy has been linked to decreased functional status, cognitive impairment, falls, urine incontinence, and poor nutritional status in older individuals. Poly-pharmacy's negative effects have also been seen in Chinese elderly people over the age of 80 Noncompliance is one of the most serious side effects of Poly-pharmacy, with rates ranging from 43 to 100 percent among various groups of the elderly. Noncompliance might have significant consequences for the patient's life. Hospitalization, more medications, further medical/surgical procedures, and increased health expenditures (for both the patient and society) are all major repercussions of therapeutic failure [9].

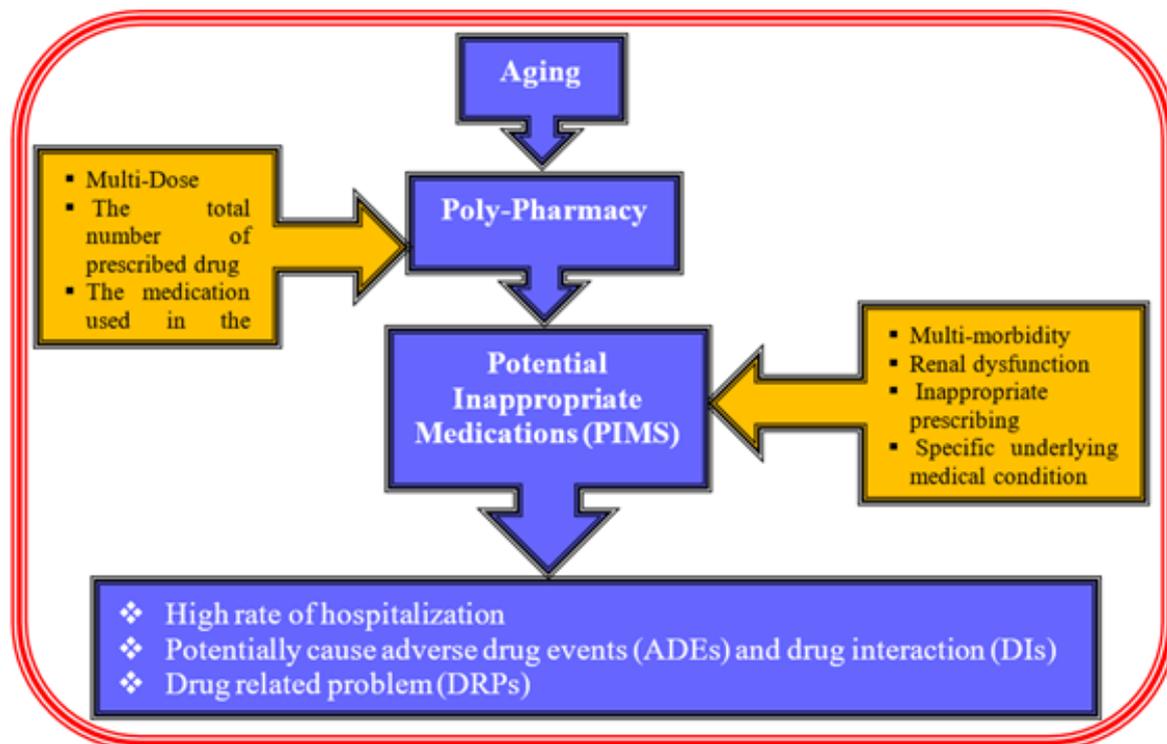


Figure 1: The impact caused by Poly-pharmacy [10].

Significance of the Study

Poly-pharmacy has been found to increase the likelihood of an older person having an adverse medication response by 75%, and up to 12% of all hospital admissions in older patients were attributable to bad drug reactions, half of which might have been avoided [11]. Poly-pharmacy raises the risk of hazardous drug-related events in

older people for two reasons: first, a greater number of medications mean a greater chance of dangerous drug-drug interactions. Second, aging is linked with physiological changes (e.g., weight loss, degradation of liver and renal excretion, reduction in cardiac output, and body composition remodeling) that render older individuals more susceptible to hazardous medication responses.

Third, because chronic multi-morbidity is more common in older people, there is a higher chance of drug-disease interactions [12]. Therefore, the study aims to assess the knowledge and the used alternative practices to control Poly-pharmacy among old age patients.

Aim of the Study

The current study aims to:
Assess the level of knowledge and practices used by old age patients to control poly-pharmacy.

Research questions

1. What is the level of old age patient's knowledge with regards to polypharmacy?
2. What are the alternative practices used by old age patients to control poly-pharmacy?

Subjects and Methods

Technical design

Research design: Descriptive design was used to fulfill the aim of the study.

Research setting: This study was conducted at the outpatient (OPD) clinics affiliated to Beni-Suef university hospital.

Subjects: Representative cross-sectional convenient sample consisted of 114 elderly patients visiting OPD clinics in the pre-determined setting

Tools of data collection: Two tools were used for data collection: Tool (I): Interview questionnaire to assess geriatric patient's Poly-pharmacy knowledge consists of two parts:

Part (A): Demographic data: This part was developed to collect personal characteristics data about study subjects such as age, gender, level of education, current comorbidities...etc.

Part (B): It was conducted to assess geriatric patient's knowledge regarding Poly-pharmacy. This tool consists of 7 items in the form of multiple-choice questions.

Tool (II): Check list to assess practices used by old age patients to control poly-pharmacy. It was developed by the researcher; the tool consists of 11 items in the form of (Yes) or (No)

Tools validity: The content validity of the study tools was assessed by a jury group consisted of five experts of the Community Health Nursing. All of them were Faculty members of the Community Health Nursing Department in the Faculty of Nursing affiliated to Cairo University and Beni-Suef University.

Tools reliability: The tool's accuracy was based on Cronbach's Alpha.

Operational design

The operational design for this study included three phases namely, preparatory phase, pilot study, and field-work.

Preparatory phase: This phase started with a review of current and past, national and international related literature concerning the subjects of the study, using textbooks, articles, journals, and websites. This review was helpful to the researcher in reviewing and developing the data collection tools, and then the researcher tested the validity of the tool through a jury of expertise to test the content, knowledge, accuracy, and relevance of questions for tools.

Scoring system

Questionnaire to assess the old age patient's knowledge related to poly-pharmacy. It consists of 7 major items and each item was scored 3 for the correct and complete answer and 2 for the incomplete answer and 1 for don't know or the wrong answer. The scores were summed up and converted into a percent score. A subject who got less than 50% total score was considered to have an unsatisfactory level of knowledge and who got 50% and over was considered to have a satisfactory level of knowledge.

Check-list, which developed to assess poly pharmacy's practices used by old age patients to control poly-pharmacy, consists of 11 items. If the client reported doing the recommended action the score was "1" and if not doing "0." The scores were summed up and converted into a percent score. A patient who got a 60% or higher total score was considered as having adequate practice, and otherwise inadequate.

Pilot study: A pilot study was carried out on 12 patients to evaluate the applicability, efficiency, clarity of tools, and feasibility of fieldwork. Necessary modifications were done based on the pilot study findings. The pilot sample was excluded from the main study sample.

Field-Work: Data collection of the study was started on 15th June 2019 and completed by the end of December 2019. The researcher attended the outpatient clinics three days per week (Sunday, Monday, and Wednesday) from 9 am to 2 pm at Beni-Suef university hospital for all the older adults who are already diagnosed with multi comorbidities disease and receiving medical treatments. The researcher first explained the aim of the study to the participants and reassures them that information collected will be treated confidentially and that it will be used only for the research and they have the right to withdraw from the study at any point without any harm or effect on the service they are receiving.

Ethical consideration: Verbal consent was taken from each nurse as well as patient to participate in this study. During the initial interview, the purpose of the study and the procedures were explained to the participants.

Administrative design

An official letter requesting permission to conduct the study was submitted to the director of Beni-Suef university hospital to obtain his approval to carry out this study. This letter included the aim of the study and photocopy from data collection tools to get permission and help for the collection of data.

Statistical design

The collected data were organized, tabulated, and statistically analyzed using SPSS version 19 created by IBM. For numerical values, the mean and standard deviations were calculated, while the Chi-square test was used to detect the statistical differences between variables. When the chi-square test was not suitable due to the presence of observations with a small number, Monte Carlo exact test was used. The correlation between study variables was calculated using Pearson's correlation coefficient the level of significance was adopted at $p < 0.05$.

Results

Table 1: showed that the distribution of socio-demographic characteristics of the study sample as data reveals that 56.2% was male, 69.3% were living in rural areas, while 51.7% were married. Moreover, 38.6% completed secondary education, 60.5% didn't have enough income, and 70.1% of the study sample had easy access to medical health services.

Figure 1: describes that the distribution of the study sample according to their lifestyle. The data revealed that 64% were eating a balanced diet, 29.8% were practicing exercise at least 5 times per week, 66.7% were sleeping around 6-8 hours per day, and 55.3% were avoiding active and passive smoking.

Table 2: describes that the Distribution of the study sample according to their knowledge about Poly-pharmacy. The data showed that 41.2% were unaware of the Poly-pharmacy definition, 36.8% didn't know about Poly-pharmacy contributing factors, 38.5% didn't know the people at risk, 28.9% couldn't identify the impact of Poly-pharmacy on their physical functions, 38.5% were unaware of GIT side effects related to Poly-pharmacy, 35.9% were unaware of the Poly-pharmacy impact on their cognitive function and 29.8% didn't know the measures that are reducing Poly-pharmacy.

Table 3: clarified the distribution of the study sample according to self-reported practice to reduce Poly-pharmacy. The data revealed that 79.8% and 78%, respectively, weren't reading the labels of the medications nor adhering to the immunization system of the old age, 74.5% weren't practicing exercise, while 61.4% were asking about the right dose and right route. Moreover, 56.1 % and 58.7 %, respectively, were neither sharing nor borrowing medications and follow non-pharmacological measures to reduce constipation. More than one-third of the study sample (38.5%) wasn't asking about the right dose and right route, and 23.6% and 20.2%, respectively, were following non-pharmacological measures to reduce pain and reading the label of the medications.

Table 4: described the relationship between demographic characteristics of the study sample and their total level of knowledge. The data indicate that male patients had a significantly more satisfactory level of knowledge compared to females' satisfactory level 46.8% and 20%, respectively. Residence in rural or urban areas was not significantly associated with the level of knowledge. While education was a significant predictor for the level of knowledge, university education was the highest percentage of a satisfactory level of knowledge (60%) followed by secondary education (50%), then primary (30%) then illiterate (12%). Education was highly statistically related to the level of knowledge.

Table (5): clarifies that the relationship between demographic characteristics of the study sample and their total level of practice. Data showed that female patients were significantly having a more satisfactory level of practice compared to males 56% & 31.2% respectively; while patients from urban areas were significantly having a more satisfactory level of practice compared to residents of rural areas 60% and 34.1% respectively. Finally, education was a statistically significant predictor for the level of practice as university education was associated with the highest percentage

of a satisfactory level of practice (66.6%) followed by secondary education (59.1%), then primary (23.3%) then illiterate (20%). The residence was also a significant predictor for the level of practice.

Items	N	%
Gender		
Male	64	56.2
Female	50	43.8
Residence		
Rural	79	69.3
Urban	35	30.7
Marital status		
Married	59	51.7
Divorced	10	8.7
Widowed	45	39.6
Education		
Illiterate	25	21.9
Primary	30	26.3
Secondary	44	38.6
University	15	13.2
Income		
Enough	45	39.5
Not enough	69	60.5
Number of currently used medications		
Less than 5 medications	0	0
More than 5 medications	114	100%
Accessibility to medical health services		
Easy to reach	80	70.1
Difficult to reach	34	29.8

Table 1: Socio-demographic characteristics of the studied sample (N=114).

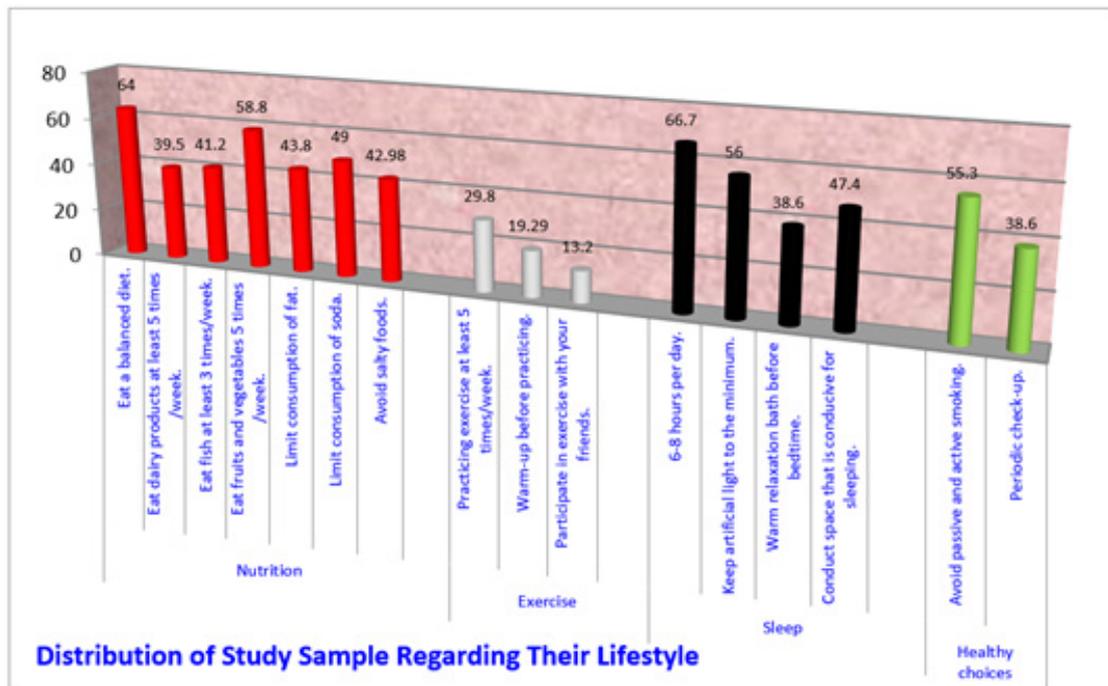


Figure 1: Lifestyle (Nutrition, Exercise, Sleep, and Healthy choices) of study sample.

knowledge about Poly-pharmacy	Complete answer		Incomplete answer		Don't know	
	N	%	N	%	N	%
1. Definition	37	32.5	30	26.3	47	41.2
2. Contributing factors	27	23.7	45	39.4	42	36.8
3. People at risk	40	35.1	30	26.3	44	38.5
4. Impact on physical function	40	35.1	41	35.9	33	28.9
5. Side effects related GIT	35	30.7	35	30.7	44	38.5
6. Impact on cognitive function	29	25.4	44	38.5	41	35.9
7. Measures to reduce Poly-pharmacy	31	27.2	49	42.98	34	29.8

Table 2: Study sample's knowledge about Poly-pharmacy (114).

Self-reported practice to reduce Poly-pharmacy	Done		Not done	
	N	%	N	%
1. Check up and follow up with the same physician.	35	30.7	79	69.2
2. Use the same pharmacy.	44	38.5	70	61.4
3. Review your medication with your physicians.	33	28.9	81	71
4. Read labels.	23	20.2	91	79.8
5. Ask about the right dose and right route.	70	61.4	44	38.5
6. Don't share or borrow medications.	50	43.8	64	56.1
7. Adherence to immunization system for old age.	25	21.9	89	78
8. Follow infection control measures.	30	26.3	84	73.6
9. Follow non-pharmacological measures to reduce pain.	27	23.6	87	76.3
10. Follow non-pharmacological measures to reduce constipation.	47	41.2	67	58.7
11. Practice exercising.	29	25.4	85	74.5

Table 3: Study sample's self-reported practice to reduce Poly-pharmacy (114).

Demographic characteristics	Satisfactory (40)		Unsatisfactory (74)		X ²	P
	N	%	N	%		
Gender (n)					8.9	0.002*
Male (64)	30	46.8	34	53.2		
Female (50)	10	20	40	80		
Residence					0.01	0.9
Rural (79)	28	35.4	51	64.6		
Urban (35)	12	34.2	23	65.7		
Education					17.2	0.0006*
Illiterate (25)	3	12	22	88		
Primary (30)	6	20	24	80		
Secondary (44)	22	50	22	50		
University (15)	9	60	6	40		

(*) statistically significant at p <0.05

Table 4: Relationship between demographic characteristics of the study sample and their total level of knowledge (114).

Items	Satisfactory (48)		Unsatisfactory (66)		X ²	P
	N	%	N	%		
Gender (n)					7.1	0.007
Male (64)	20	31.2	44	68.8		
Female (50)	28	56	22	44		
Residence					3.9	0.004
Rural (79)	27	34.1	52	65.9		
Urban (35)	21	60	14	40		
Education					18.2	0.0003
Illiterate (25)	5	20	20	80		
Primary (30)	7	23.3	23	76.6		
Secondary (44)	26	59.1	18	40.9		
University (15)	10	66.6	5	33.4		

Table 5: Relationship between demographic characteristics of the study sample and their total level of practice (N=114).

Discussion

Poly-pharmacy increases emergency visits for old age patients by 67% and increases hospitalization by 40.6%. Another study conducted in Sweden reported that those taking 5 or more medications had a 6.2% increase in prescription drug expenditure and those taking 10 or more medications had a 7.3% increase [13]. Therefore, the study aims to assess the level of knowledge with regards to poly-pharmacy among old age patients and also to assess the alternative practices used by old age patients in order to control poly-pharmacy.

Concerning the balanced diet, the current study revealed that less than two-thirds of the study subjects were keen to have a balanced diet, this might be because of the relatively high educational level of the study sample, these results were in contrast with Gardner M., et al., (2018) results which presented that near three-quarters of the study sample were adhering to a balanced diet [14].

The current study revealed that near to three-quarters of the study subjects weren't practicing exercise regularly, this might be due to a lack of awareness about the importance of having daily exercise as a healthy lifestyle, the engagement of the subjects to get living expenses, and absence of sporting facilities within the setting, these results were reported also by Abdelwahed A Y., et al., (2018) who endorsed that less than a third of his study sample were practicing regular exercise [15].

Regarding the sufficiency of sleeping hours, the current study revealed that around two-thirds of the study subjects were sleeping around 6-8 hours per day, maybe because of the nature of rural area living style that scarcity of night activities encourages the early sleeping that gives them the chance to sleep enough time. These results were in the same line with Irfan T., et al., (2021) who stated in his study that about near to half of the studied subjects didn't have sufficient sleeping hours [16].

Regarding the level of education and its effect on poly-pharmacy awareness, the current study showed that education was a significant predictor of the level of knowledge about poly-pharmacy, this might be due to the important role of educational level in enriching the patient's awareness about their medications through reading pamphlets and seeking more information from the treating physician or pharmacist, in the same line with these results, Abdelwahed A., et al., (2018) found that education was a significant predictor in reducing poly-pharmacy, [15] On the other hand, Bosch-Lenders, D., et al. (2016) noted was no statistically significant link between educational level or the quantity of non-prescribed medications and adequate medication knowledge [16].

With regards to the level of education and its relation with the total level of practices that reduce poly-pharmacy, the findings of the current study revealed that education was a significant predictor of a satisfactory level of practice, this might indicate the higher level of education the subjects have, the more compliance to practices that control poly-pharmacy, in agreement with the current study findings Martinez-Gomez D., et al., (2018) and Gillespie, R., et al. (2019) found that the higher level of subject's education was significantly associated with a more favorable level of leading healthy lifestyle practices that would reduce poly-pharmacy [17,18].

Although numerous researches have contributed to a better understanding of the everyday problems faced by informal caregivers administering medicine for older persons, little is known about educational or training treatments targeted at enhancing caregivers' medication management skills [19].

More research is needed to better understand how to help informal caregivers in their responsibilities as medication managers. Psycho-education, digital apps, and specialist counselling services provided by pharmacists or advanced practice nurses should all be taken into account. One of the responsibilities given to primary healthcare professionals should be collaborating with informal caregivers and incorporating their experiences of shared decision-making. To make this a reality, they could get assistance from their bosses and perhaps even financial incentives to help informal caregivers improve drug management. To assess the efficacy of such incentives, further study will be required [20].

To avoid negative health outcomes and encourage autonomy in their everyday lives, home-dwelling older people with numerous chronic illnesses should prioritize competent primary care management. Older people at high risk of medication-related problems (MRPs) should be given a primary care manager with the goal of meeting their requirements in terms of preventive and chronic diseases on a regular basis. Primary care managers may help reduce hospital admissions, re-hospitalizations, nursing home institutionalization, and early mortality by utilizing planned interactions and ensuring proper follow-up [21].

Risks of adverse effects increase as the number of medications increases, So, during admission, a complete health and medication history are very important to minimize the adverse reactions and toxicity, Health care providers can use four concepts such as connectedness and collaboration, open-ended questions, positive attitude, and encourage support to develop coaching skills that can

be applied to improve patient adherence [22].

Conclusion

The current study concluded that The prevalence of polypharmacy and its consequences among the elderly is significantly affected by the level of education. University education was the highest percentage of a satisfactory level of knowledge about poly-pharmacy and the highest satisfactory adherence to the alternative practices that control poly-pharmacy, followed by secondary education, then primary then illiterate.

Recommendations

In the light of the results of this study, the following recommendations were suggested

1. Designing an educational program tailored for the elderly people aiming at raising their awareness and knowledge about poly-pharmacy and its consequences.
2. Activating the role of patient-family-educators while inpatients discharge and within ambulatory care services to enhance the use of non-pharmacological interventions and safe medication administration for the elderly and caregivers.
3. Further studies should be conducted in different settings.

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