

Control Poly-Pharmacy: Elderly Patients' Practices

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Abstract Background: Poly-pharmacy is an area of concern for the elderly. Poly-pharmacy was initially coined to refer to specific problems linked to multiple drug intake and excessive drug usage. **Aim of the study:** The study aims to assess practices used by old-age patients to control Poly-pharmacy. **Design:** Descriptive cross-sectional study design was used to answer the research questions. **Subjects & Setting:** sample size was 114 elderly patients from elderly patients visiting outpatient clinics monthly. **Tools:** A checklist to assess poly pharmacies' practices. **Results:** the majority of the study sample wasn't reading the labels of the medications nor adhering to the immunization system of the old age (79.8% and 78%, respectively). The highest satisfactory level (66.6%) of practice was for the university education, followed by the urban area residents (60%), and finally, in the third level were the secondary level of education 59.1%. **Conclusion:** The prevalence of polypharmacy and its consequences among the elderly is significantly affected by the level of education. University education was the highest satisfactory adherence to the alternative practices that control poly-pharmacy, followed by secondary education, then primary then illiterate. **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

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1. Introduction

The old-age population suffers from chronic diseases and multi-morbidity and is treated with an increasing number of drugs which arises the phenomenon of Poly-pharmacy. [1] Poly-pharmacy has been defined as per a systematic review conducted in 2017 as the concurrent use of five or more different prescription medications. [2] Poly-pharmacy is an area of concern for the elderly mainly because of: (1) adverse drug reactions, (2) falls, and (3) medication noncompliance. [3]

Developing countries are witnessing an increasing number of geriatric populations due to ongoing improvement in the health sector and elderly people are living longer. Although the number of old people in developing nations is frequently considerable, the percentage of elderly people is usually minimal. Moreover, 280 million persons aged 60 or older lived in developing countries in 1990, accounting for 58 percent of the world's elderly. [4] Until January 2019, Egypt's elderly population had reached 6.5 million; 3.5 million males and 3 million females; this is according to the Central Agency for Public Mobilization and Statistics. [5]

Poly-pharmacy is a geriatric syndrome. Poly-pharmacy was initially coined to refer to specific problems linked to

multiple drug intake and excessive drug usage, and it first appeared in the medical literature more than one and a half centuries ago. Since then, it has been used in a variety of papers and reports, with various definitions and connotations, such as "unnecessary drug usage" and "medication use without indication." Although older people make up approximately a third of the worldwide population, they consume about a third of all prescription medicines. Poly-pharmacy has been a topic of concern for primary care physicians, geriatricians, pharmacists, healthcare payers, and regulatory agencies as a result of the development of modern medicine and the fast increase of the older population. [3,6]

In one study, Poly-pharmacy was associated with duplicate therapy and contraindicated drug combinations. In addition, clinical practice guidelines provide a step-like approach to the management of many of the frequently diagnosed chronic illnesses. Multiple medicines are included in the standards suggested in guidelines; for example, a patient with severe congestive heart failure may take medications from four distinct pharmacological groups. We've already reached Poly-pharmacy with a COPD diagnosis, which may involve three different inhaled medicines as well as oral steroids. [7]

Individuals with chronic illnesses find it difficult to perform at the greatest level possible. Physicians, nurse practitioners, specialists, and hospitalists are all

accountable for doing a comprehensive examination of the entire patient as their patients' caregivers. In reality, however, prescribers may ignore the bigger picture and prescribe with only one illness condition in mind. [8]

Standard steps to avoid Poly-pharmacy include taking advantage of medication reconciliation opportunities. These can be found at admission to the hospital, or between admission and transfer to sub-acute care or long-term care, or from sub-acute care to the community. When drugs used to treat acute illnesses are continued post-discharge together with prescriptions the patient has been taking at home, it's usual to detect duplications. At each care transition, there is a chance to evaluate all medicines and supplements and conduct a crucial stop-and-think evaluation to eliminate unneeded drugs. Multiple standards of practice recommendations identify complete medication reconciliation as a critical activity. [9]

One such requirement for medicines is included in the Joint Commission's 2016 National Patient Safety Goals: Keep track of and provide accurate information regarding a patient's medications. Compare and contrast those medications with the new medications that the patient was given. Ascertain that the patient understands what medications to take at home. Inform patients that it is critical to bring an up-to-date list of medications to every appointment so that medication reviews may be completed and appropriate action can be taken. [10]

Raising patient awareness about the problems of Poly-pharmacy and non-adherence is important, as patients can play a key role in the prevention and early detection of inappropriate Poly-pharmacy. Patients should be seen as shared decision-makers on the use of medication, and health care professionals need to support patients, families, and caregivers in order to enable them to undertake this role. Patients should be encouraged and supported to disclose all the medications they are taking, including Over-The-Counter (OTC) and traditional and complementary medicines, especially if they are suffering from multiple conditions and are being treated with Poly-pharmacy. Health literacy, social norms, and cultural factors would need to be considered when considering the role of patients and designing materials for patient education. [11]

Patient Tools and materials can support the engagement and empowerment of patients, families, and caregivers in playing an active role in health care, such resource materials may include: (1) Patient-held medication list or patient-held medication record, sometimes called medication passport (either paper or electronic), can help to optimize patients' medicines. The use of these tools has received positive feedback from patients. Such lists, provided that they are up to date, can also be helpful at care transitions. (2) Patient resource materials that enable patients to understand how to make decisions regarding the management of their health conditions and their medications are available. An example of a tailor-made tool is the Medicine Sick Day Rules card, which explains to patients which medicines should be temporarily stopped during dehydration due to an illness. [12]

Different organizations, including WHO, have developed

materials that include simple questions to encourage patients to be active participants in their therapeutic decision-making. For example, the five moments for Drug Safety focuses on five important moments in the medication use process where the patient, family member or caregiver may substantially minimize the risk of harm connected with the use of pharmaceuticals by taking action. The tool aims to engage and empower patients to be involved in their care more proactively and feel responsible for it, encourage their curiosity about the medications they are taking, empower them to communicate openly with their health professionals and be involved in shared decision-making. The technology could improve both patient experience and medication adherence. Furthermore, it has the potential to enable patients to be active participants in medication reviews. However, more research is required to evaluate strategies for integrating such tools into clinical practice and to ensure they meet their potential in improving patient outcomes and creating value for all users. [13]

1.1. Significance of the Study

Altered pharmacokinetics can make an old age patient more susceptible to the side effects of drugs. Common side effects include sedation, nephrotoxicity, hepatotoxicity, cardiotoxicity, confusion, dizziness, hypotension, and hypoglycemia. [14]

The nursing role is vital in controlling Poly-pharmacy among old-age patients in different health care settings. Key nursing strategies in managing Poly-pharmacy in geriatric patients include: Understanding the Effects of Poly-pharmacy, Performing Routine and Complete Assessment, Building and Maintaining Close Relationships, Educating and Motivating Patients, Monitoring and Identifying the Barriers, Consulting with Multidisciplinary Team Members, Following-up the Progress, Documenting, Reporting and Advocating for Patient's Safety and Wellness. [14,15] Therefore, the study aims to assess the used alternative practices to control Poly-pharmacy among old age patients.

1.2. Aim of the Study

The current study aims to:

Assess the safe alternative practices used by old age patients to control poly-pharmacy.

1.3. Research Questions

What are the alternative practices used by old age patients to control poly-pharmacy?

2. Subjects and Methods

Subjects and methods of this study were portrayed under the four main topics as follows:

- 2.1. Technical design.
- 2.2. Operational design.
- 2.3. Administrative design.
- 2.4. Statistical design.

2.1. Technical Design

The technical design for this study includes research design, research setting, and subjects of the study, and tools of data collection.

2.1.1. Research Design

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

2.1.2. Research Setting

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

2.1.3. Subjects

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

2.1.4. Tools of Data Collection

Two tools were used for data collection for the current study namely, geriatric patient's poly-pharmacy knowledge, Check the list to assess poly-pharmacy alternative practices.

Tool (I):- Check the list to assess poly-pharmacy alternative practices. To assess the alternative 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)

2.1.5. 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. Jury group members judge tools for comprehensiveness, accuracy, and clarity of the used language. Based on their recommendation, correction, addition, and/or omission of some items were done.

2.1.6. Tools Reliability

The tool's accuracy was based on Cronbach's Alpha.

2.2. Operational Design

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

2.2.1. 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:

Check-list to assess poly pharmacy's alternative practices: To assess the alternative practices used by old

age patients to control poly-pharmacy. It consists of 11 items as Checkup and follows up with the same physician, use the same pharmacy, and Review your medication with your physicians. If the client reported doing the recommended action the score was "1" and 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.

2.2.2. Pilot Study

A pilot study was carried out on 12 patients to evaluate the applicability, efficiency, clarity of tools, assessment of the feasibility of fieldwork, besides to detect any possible obstacles that might face the researcher and interfere with data collection. Necessary modifications were done based on the pilot study findings to strengthen their contents or for more simplicity and clarity. The pilot sample was excluded from the main study sample.

2.2.3. 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.

2.2.4. Ethical Consideration

The study was conducted with careful attention to the ethical standards of research and the rights of participants. 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. Subjects were assured that all information will be treated confidentially and will be used for research only to assure the confidentiality of the participants. Participants will be assured that their participation in the study is voluntary and that they can refuse/withdraw from the study at any time. It was explained that there are no costs to participate in the study and no harm from withdrawal or Refusing to participate.

2.3. 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.

2.4. 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 $p < 0.05$.

3. Results

Figure 1 clarifies that the distribution of the study sample according to their medical history. Data illustrated that around half of the studied sample (48.2%) has cardiovascular disease, while liver disease and diabetes mellitus represented 43.9% & 35.1, respectively. On the other hand, the least reported diseases were respiratory problems and renal diseases (17.5 & 13.2%, respectively).

Figure 2 described that the distribution of the studied sample regarding their common health complaints. The table revealed that the majority of the study sample was complaining of heartburn (83.3%). More than three-quarters of the study sample (78.9%) were complaining of headache, two-thirds of the study sample (66.6%) was complaining of constipation. Near half of the study sample (47.4%) were complaining from joint pain, more than one-third (39.4%) of older adults were complaining from

abdominal colic. Finally, the least complaint was for blurred vision as closed to the third of the studied sample (32.4%) was reported among the older adults.

Figure 3 clarified the distribution of the study sample according to self-reported practice to reduce Poly-pharmacy. The data revealed that the majority of the study sample wasn't reading the labels of the medications nor adhering to the immunization system of the old age 79.8% and 78% respectively. Almost three-quarters of the study sample (74.5%) wasn't practicing exercise, while two-thirds of the study sample (61.4%) was asking about the right dose and right route. More than half of the study sample was either sharing or borrowing medications and Follow non-pharmacological measures to reduce constipation 56.1 % and 58.7 % respectively. More than one-third of the study sample (38.5%) wasn't asking about the right dose and right route. Less than a quarter of the study sample were Following non-pharmacological measures to reduce pain and reading the label of the medications 23.6% and 20.2%, respectively.

Figure 4 shows that the highest satisfactory level (66.6%) of practice was for the university education, followed by the urban area residents (60%), and finally, in the third level were the secondary level of education 59.1%, On the other hand, the highest unsatisfactory level of practice was from the illiterate patients 80% followed by both the primary level of education 76.6% and finally, in the third level were the male patients 68.8%.

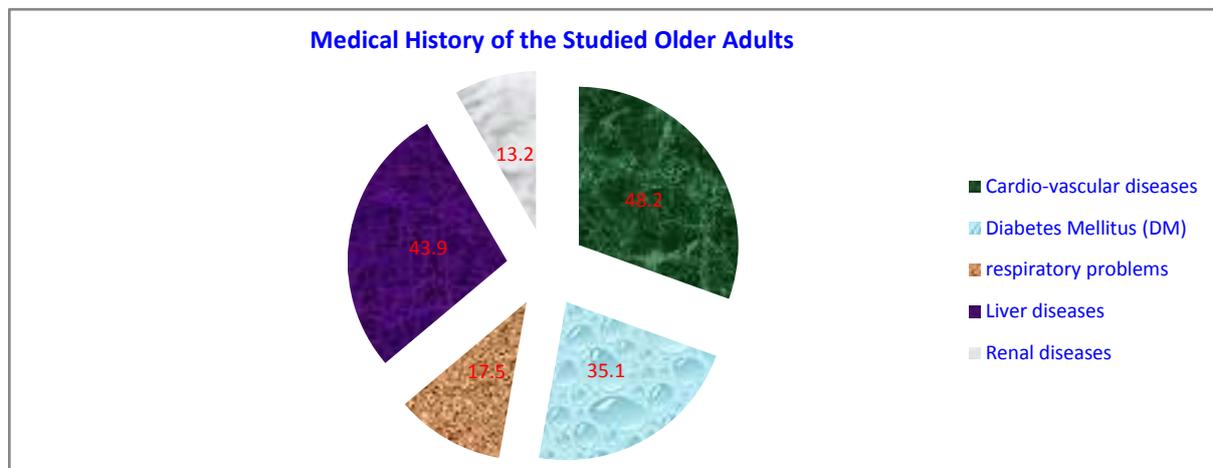


Figure 1. Distribution of studied older adults according to their medical history

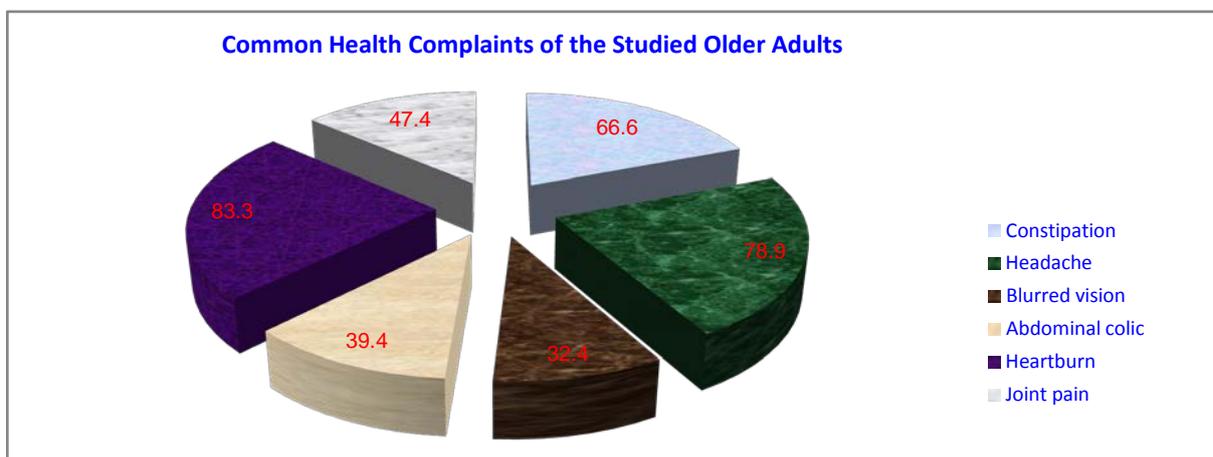


Figure 2. Distribution of the studied older adults according to their common health complaints

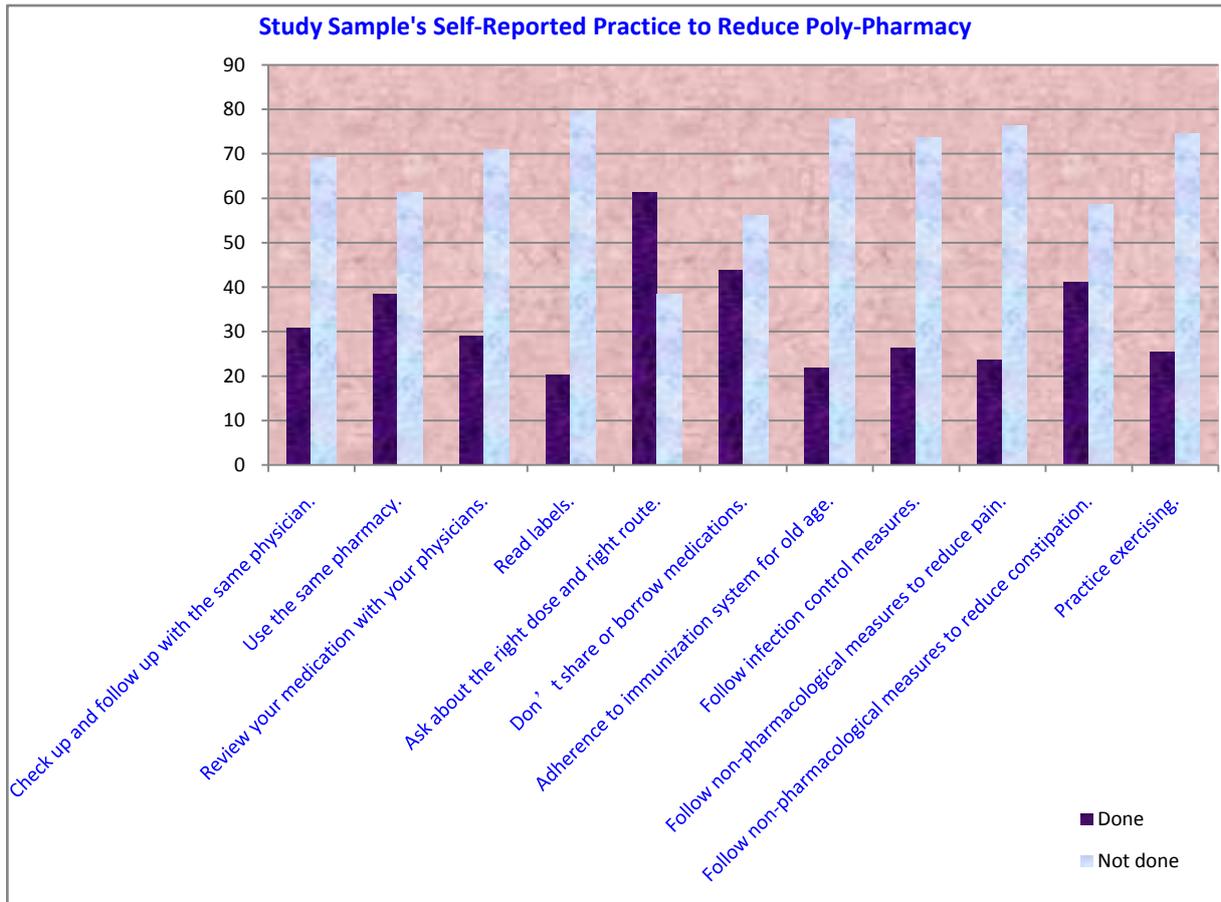


Figure 3. Distribution of the study sample according to their self-reported practice to reduce Poly-pharmacy

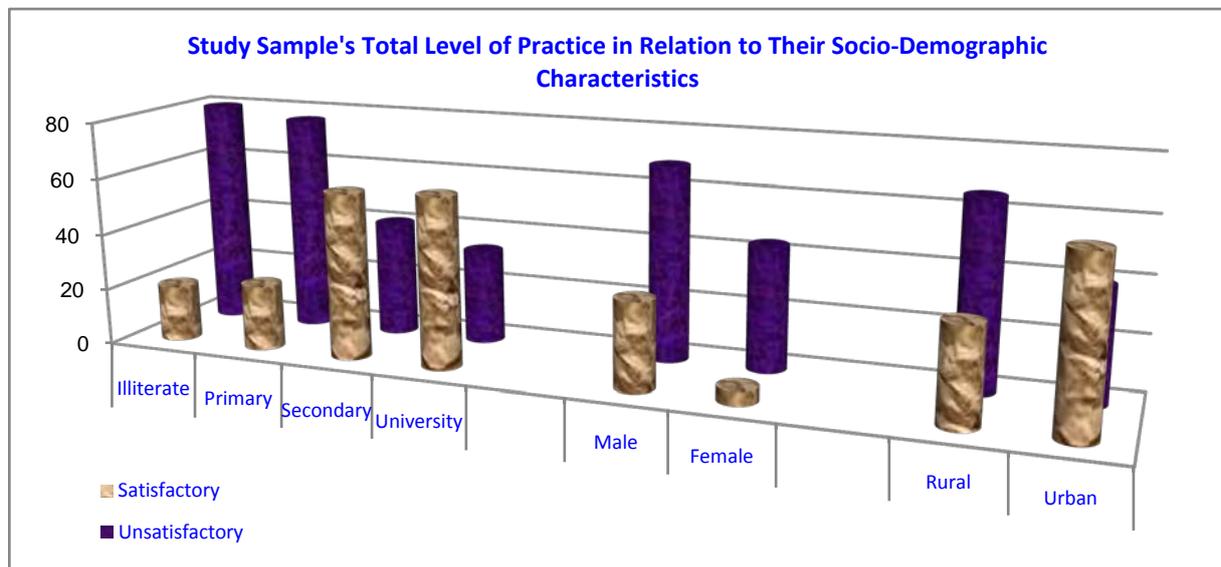


Figure 4. Demographic characteristics of the study sample in relation to their total level of practice

4. Discussion

Poly-pharmacy increases the risk of adverse drug-related events in old because a greater number of medicines mean a greater chance of dangerous drug-drug interactions as weight loss, degradation of liver and renal excretion, a reduction in cardiac output, and body composition modification are all linked with ageing process. [16,17]

In relation to the sample distribution regarding the medical history of the subjects, the current study illustrated that

near half of the studied sample have cardiovascular disease, this might be explained by a lack of awareness about the importance of a healthy lifestyle in preventing cardiac diseases within the rural community. These results were supported by Weheida. S.M., et al., (2020) and Algameel, M., (2020) who concluded that near half of their studied subjects were having cardiovascular disease. [18,19]

On the other hand, the least reported diseases by the current study sample were respiratory problems and renal diseases these results were in the same line with the results

reported by Dawood S., et al., (2020). [20] While Schapira M., et al., (2020) stated that the highest prevalence of the disease among his studied sample were cardiovascular diseases while the less prevalent diseases were renal and respiratory. [21]

The current study revealed that most of the study subjects were complaining of heartburn and constipation, this might be a result of the aging process and medication's side effects. on the same line as Mahmoud N., et al., (2020) stated that the main health problems of older adults were constipation and heartburn. [22]

Regarding self-reported practice that may reduce Poly-pharmacy, the current study demonstrated that more than two-thirds of the study sample was not following up regularly with the same physician, from the researcher point of view this may be due to physical or financial obstacles to follow up with the same physician and also if the patients experienced unpleasant side effects or didn't see any immediate benefit from the medication, so they may change the physician, in the same regard Shaheen, et al., (2017) showed similar percentage that was more than third of the studied sample was doing regular follow-ups to review their medications. [23]

The findings of the present study showed that more than two-thirds of the studied subjects were not reading the labels of their medications before taking them; this might be related to the educational level of the studied sample and the setting of the study. on the opposite side Manchanayake M., et al., (2018) found that less than half of his studied sample was reading the labels of their medications. [24]

Concerning the demographic characteristics of the study sample in relation to their total level of practice, the current study showed that female patients were significantly having a more satisfactory level of practice compared to males and this might be explained by the higher commitment of the females in following the healthy lifestyle and controlling the poly-pharmacy, supporting the current study results Martinez-Gomez D., et al., (2018) who found that female subjects in his study were having a more satisfactory level of healthy lifestyle practices compared to males subjects. [25]

5. 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 satisfactory adherence to the alternative practices that control poly-pharmacy, followed by secondary education, then primary then illiterate.

6. Recommendations

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

- Designing an educational program tailored for the elderly people aiming at raising their awareness and knowledge about poly-pharmacy and its consequences.

- 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.
- Further studies should be conducted in different setting.

References

- [1] Wang, R., Chen, L., Fan, L., Gao, D., Liang, Z., He, J., Gao, L. (2015). Incidence and effects of Poly-pharmacy on clinical outcome among patients aged 80+: A five-year follow-up study. PLoS ONE.
- [2] Masnoon, N., Shakib, S., Kalisch-Ellett, L., & Caughey, G. E. (2017). What is Poly-pharmacy? A systematic review of definitions. BMC Geriatrics, 17(1), 1-10.
- [3] De Cock, J. (2014). "Info spot - Poly-pharmacy in older adults." Riziv, 33(10), 524-529.
- [4] Drahansky, M., Paridah, M. ., Moradbak, A., Mohamed, A. ., Owolabi, F. abdulwahab taiwo, Asniza, M., & Abdul Khalid, S. H. (2016). We are IntechOpen , the world ' s leading publisher of Open Access books Built by scientists , for scientists TOP 1 % . Intech, I (tourism), 13.
- [5] CAMPAS, 2019. Retrieved from: <https://www.capmas.gov.eg>.
- [6] Schlesinger, A., Weiss, A., Nenaydenko, O., Adunsky, A., & Beloosesky, Y. (2016). Does Poly-pharmacy in Nursing Homes Affect Long-Term Mortality? Journal of the American Geriatrics Society, 64(7), 1432-1438.
- [7] Wastesson, J. W., Morin, L., Tan, E. C., & Johnell, K. (2018). An update on the clinical consequences of Poly-pharmacy in older adults: a narrative review. Expert opinion on drug safety, 17(12), 1185-1196.
- [8] Scott IA, Hilmer SN, Reeve E, et al., Reducing inappropriate Poly-pharmacy: the process of deprescribing. JAMA Intern Med. 2015; 175 (5): 827-834.
- [9] Shimamura, H., Katsuragi, S., Yoshikawa, M., Nakura, M., Sasaki, T., & Itabe, H. (2020). Standard Pharmacist Intervention Checklist to Improve the Appropriate Use of Medications for Inpatients with Poly-pharmacy. BPB Reports, 3(6), 196-201.
- [10] Lang, A., Macdonald, M., Marck, P., Toon, L., Griffin, M., Easty, T., Fraser, K., MacKinnon, N., Mitchell, J., Lang, E., & Goodwin, S. (2015). Seniors managing multiple medications: Using mixed methods to view the home care safety lens. BMC Health Services Research, 15(1), 1-15.
- [11] Bombard, Y., Baker, G. R., Orlando, E., Fancott, C., Bhatia, P., Casalino, S., ... & Pomey, M. P. (2018). Engaging patients to improve quality of care: a systematic review. Implementation Science, 13(1), 1-22.
- [12] Ikemefuna, V. (2017). Impact of Staff Education on Knowledge of Geriatric Poly-pharmacy- Pro Quest. Retrieved from <https://search.proquest.com/docview/2008219065/abstract/E03EEFE9DDB64225PQ/1?accountid=33993>.
- [13] World Health Organization. (2019). Medication Safety in Poly-pharmacy. World Health Organization. <http://apps.who.int/bookorders>.
- [14] Golchin, N., Isham, L., Meropol, S., Vince, A., & Frank, S. (2015). Poly-pharmacy in the elderly. Journal of Research in Pharmacy Practice, 4(2), 85.
- [15] Poudyal, P. Poly-Pharmacy And Pills Burden On Geriatric Patients. (2012). University off Alberta, NURS 495.
- [16] Davies, E. A., & O'mahony, M. S. (2015). Adverse drug reactions in special populations-the elderly. British journal of clinical pharmacology, 80(4), 796-807..
- [17] Aboudonya M., Badr Elden S., Hassan H., Hafez S. Knowledge And Practices Used By Old Age Patients To Control Polypharmacy. Nile journal for geriatric and gerontology, 2022; 5(1): 80-91.
- [18] Weheida, S. M., Diab, S. M., Younis, G. A., Sayed, S. E., & Address, E. (2020). Tanta Scientific Nursing Journal. Tanta Scientific, 19(1), 34-59.

- [19] Algameel, M. (2020). Patterns of medication use and adherence to medications among residents in the elderly homes. *Pakistan Journal of Medical Sciences*, 36(4), 729-734.
- [20] Dawood M., Abdel-Razik N., Gewaily M., Sewilam H., Paray B., Soliman A., Abdelhiee E., Aboubakr M., Doan H., El-Sabagh A., El Basuini M. β -Glucan improved the immunity, hepato-renal, and histopathology disorders induced by chlorpyrifos in Nile tilapia. *Aquaculture Reports*, 2020; 18.
- [21] Schapira, M., Calabró, P., Montero-Odasso, M., Osman, A., Guajardo, M. E., Martínez, B., Pollán, J., Cámara, L., Sassano, M., & Perman, G. (2020). A multifactorial intervention to lower potentially inappropriate medication use in older adults in Argentina. *Aging Clinical and Experimental Research*, 0123456789.
- [22] Mahmoud, N., Sakhy, E., Mohamed, N. Y., Hosni, H., & Sherbini, E. (2020). Food Safety Knowledge, Practices and Attitudes of Community Dwelling Older Adults in Marsa Matrouh City, Egypt. 7(2), 366-383.
- [23] Shaheen, H., Badr, S., & El Sayed Saleh, E. (2017). Comparative study between elderly with medical problems living in endwelling houses and with families in Banha City. *Menoufia Medical Journal*, 30(1), 44.
- [24] Manchanayake, M. G. C. A., Bandara, G. R. W. S. K., & Samaranyake, N. R. (2018). Patients' ability to read and understand dosing instructions of their own medicines - A cross sectional study in a hospital and community pharmacy setting. *BMC Health Services Research*, 18(1), 1-9.
- [25] Martinez-Gomez, D., Guallar-Castillon, P., Higuera-Fresnillo, S., Banegas, J. R., Sadarangani, K. P., & Rodriguez-Artalejo, F. (2018). A healthy lifestyle attenuates the effect of Poly-pharmacy on total and cardiovascular mortality: a national prospective cohort study. *Scientific Reports*, 8(1), 1-8.



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