Chapter 59

The prevalence of polypharmacy in the elderly with depressive symptoms: an integrative review

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ABSTRACT
Introduction: The elderly and the multiple diseases that affect them with increasing age, cause the increase and consumption of medicines and the risk of polypharmacy, which the World Health Organization defines how to take several medicines at the same time or administering an excessive number of medicines, whether prescribed, exempt from prescription or other traditional medicines. The definition of polypharmacy most adopted in the literature is the use of five or more medications. Objective: To investigate the verification of the prevalence of polypharmacy in the elderly with depressive symptoms, showing how the whole nursing process takes place. Method: Integrative review carried out between February and April 2022. Inclusion criteria: articles from the last 5 years published in lilacs, Medline, IBECS and BDENF databases in Portuguese, English, and Spanish. Exclusion criteria were those that did not address the theme of the study, the articles not found, or that were repeated between the bases. Results: The search resulted in 76 articles and with the application of inclusion and exclusion criteria, 12 studies were selected with full texts, for a discussion on the subject, being categorized into two parts: actions to detect polypharmacy and depressive symptoms among the elderly with the use of polypharmacy. Conclusions: The essential measures are the early screening and diagnosis of polypharmacy, for an efficient implementation of intervention measures and, in this process, nursing is essential in the development of these measures, acting as an educator in health and health promotion. It is possible, through the use of technology and innovation, to facilitate this process of prevention and reeducation in the administration of medicines. The theme is extremely important and requires in-depth studies in the area.

Keywords: Polypharmacy, Elderly, Depressive Symptoms, Nursing.

1 INTRODUCTION

The concept of multi-drug therapy was first discussed in 1959 and since then several studies on the subject have emerged. According to the current literature, polypharmacy or poly medication is defined as the simultaneous use of five or more drugs in the equivalent of one week. The most common medications in patients with diabetes and hypertension are antihypertensives, antidiabetics, anti-lipids, antithrombotics and hypoglycemic drugs. In this case, a large number used may favor the emergence of drug interactions. (PEREIRA et al. , 2017).

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The demographic and epidemiological reorganization designed a new scenario for the actions of the Unified Health System (SUS). The population aging resulting from the fall in birth and increased life expectancy reflects the profile of diseases and causes of death of the population, moving away from a scenario of higher mortality from infectious diseases due to chronic non-communicable diseases, affecting mainly the older age groups. (SANCHES et al., 2021)

In clinical practice, the use of multiple medications is very common, and increasingly, especially for over 65 years. This growth is related to several factors, such as increased life expectancy and consequent increase in various diseases, an increased supply of medicines in the market, and recommendations. The action of improving a process, according to the prescription with the best available evidence, can heal, reduce damage, prolong life, and improve quality of life. (MEDEIROS et al. , 2007)

Inadequate combinations of medicines are serious problems for the health system and are considered costly practices. According to the World Health Organization, about 50% of patients with chronic diseases do not sign up for treatment, 4 to 5% of hospitalizations are due to preventable adverse events, and about 30% of emergency visits are caused by drug-related problems, many of which are preventable. (BUSHARDT et al., 2008).

As the human body ages, the body changes, which is conducive to the emergence of chronic diseases, causing the elderly to take more than one drug at the same time. Estimates of the number of concomitant medicinal products used by this public range from 2 to 5 for different conditions. (OLIVEIRA et al. , 2021).

2 GOALS

This study aimed to list the verification of the prevalence of polypharmacy in the elderly with depressive symptoms, showing how the whole nursing process takes place.

3 METHODOLOGY

An integrative review was carried out between February and April 2022. Inclusion criteria: articles from the last 5 years published in lilacs, Medline, ibecs and bdenf databases in Portuguese, English, and Spanish. Exclusion criteria were those that did not address the theme of the study, the articles not found, or that were repeated between the bases.

The hypothesis is: taking into account the prevalence of chronic diseases in the elderly and the risks associated with excessive use of medications, the characterization of polypharmacy in specific subgroups can contribute to improving the care offered in health services. The question was elaborated by the PICO strategy, an acronym proposed by (SANTOS, 2007) that allows the elaboration of the question by the delimitation of the problem/ subject of research (P), the direction of the Intervention (I) that will be sought, as well as the Comparison (C) in cases in which this comparison is the objective of the study and the Outcomes (O), that is, the expected outcome of this search.

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Figure 1: Description of Pico

P	Problem/subject	Elderly with depressive symptoms
I	Interventions	Polypharmacy control
C	Comparison	Does not apply
Or	Outcomes	Proposals for interventions for control

Source: Prepared by the authors, 2022.

Considering the elderly with depressive symptoms, what is the need to raise proposals for interventions to control polypharmacy in elderly with depressive symptoms and what is the prevalence of these diseases?
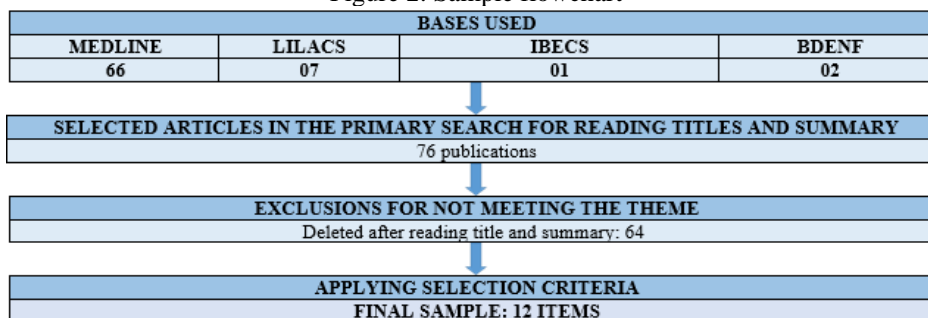
The sample was selected through the Descriptors in Health Sciences (DeCS) and Medical Subject Headings (MeSH) their controlled synonyms and boolean operators OR, AND, being the search strategy:

((Elderly OR Aged OR Anciano OR Elderly OR Elderly PERSON OR Elderly PERSON OR Elderly PERSONS OR Elderly Population) AND (Polymedication OR Polypharmacy OR Polypharmacy OR Plurimedication OR Polypharmaceuticals) AND (Depression OR Depression OR Depresión OR Depressive Symptoms)).

Four databases were researched: Latin American and Caribbean Literature on Health Sciences (LILACS), Medical Literature Analysis and Retrieval Sistem Online (MEDLINE), (IBECS) Índice Bibliográfico Español en Ciencias de la Salud and The Nursing Database (BDENF) through the Virtual Health Library (VHL).

The sample was selected considering the following inclusion criteria: articles available in full, in the Portuguese, English, and Spanish languages, of the last 5 years, articles not found or that were repeated between the bases were excluded, as observed in the flowchart represented in Figure 2:

Figure 2: Sample flowchart

BASES USED			
MEDLINE	LILACS	IBECS	BDENF
66	07	01	02

SELECTED ARTICLES IN THE PRIMARY SEARCH FOR READING TITLES AND SUMMARY
76 publications

EXCLUSIONS FOR NOT MEETING THE THEME
Deleted after reading title and summary: 64

APPLYING SELECTION CRITERIA
FINAL SAMPLE: 12 ITEMS

Source: Prepared by the authors, 2022.

4 FINDINGS

Definitions of the characteristics of the studies:

To emphasize the organization and facilitate data collection and analysis, an instrument was used to briefly base the presentation of the data. The following criteria were addressed: article title, authors, type of research, objectives, main results, conclusions, and year of publication/periodicity.

For a better understanding of the articles found, codes were made, represented by the letter "A" (article) followed by the number representing the article in sequence from one (01) to twelve (12)

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Table 1: Characterization of studies.

No.	TITLE	AUTHORS	SEARCH TYPE	GOALS	MAIN RESULTS	CONCLUSIONS	YEAR/ PERIODICO
A1	Patterns of Association between Depressive Symptoms and Chronic Medical Morbidities in the Elderly	Bruno Agustini, MD, Mojtaba Lotfaliany, MD, Robyn L. Woods, Ph.D., John J. McNeil, Ph.D., Mark R. Nelson, Ph.D., Raj C. Shah, MD, Anne M. Murray, MD, Michael E. Ernst, Ph.D., Christopher M.Reid, Ph.D., Andrew Tonkin, MD, Jessica E. Lockery, Ph.D., La	Multicenter study	Investigate the association between depressive symptoms and various medical morbidities, and their combination, in a large elderly population	The characteristics of all participants and those with and without depressive symptoms are presented in Table 1. The mean age was 75 years (standard deviation [SD] = 4.5), and the oldest participant was 98 years old. Overall, 1,879 (9.8%) participants met the threshold criteria (CES-D ÿ 8) and were classified as presenting depressive symptoms. Only four (0.02%) individuals did not complete the screening questionnaire and, therefore, were excluded from the analyses. Participants with depressive symptoms were significantly more likely to be female, less educated, obese or overweight, current and former alcoholic smokers compared to those without depressive symptoms	Late depressive symptoms are significantly associated with several medical morbidities, and there seems to be a cumulative effect of the number of somatic diseases on the prevalence of depression. These findings increase the evidence of a complex relationship between mental and physical health in a healthy elderly population and may guide physicians to the early recognition of high-risk individuals	2020, THE AMERIC AN GERIAT RICS SOCIETY
A2	Polypharmacy among elderly at home with depression	Namkee G. Choi, Ph.D., C. Nathan Marti, Ph.D., Mark E.Kunik, MD, MPh	This is a cross-sectional study	The authors evaluated the central nervous system (CNS) polypharmacy mong low-income elderly people, racially diverse, linked to home with depression and its associations Eat Classifications of participants from depressive symptoms and pain	On average, participants were 68 years old; most were female, were Hispanic or non-Hispanic blacks, had no bachelor's degree, had an income of #$ 25,000, and reported financial difficulties (can not make ends meet or almost manage to survive)	Drug reviews and better access to evidence-based psychotherapeutic treatments are needed for the elderly with depression	APRIL, 2020 PS. PSY CHIATR YONLIN E.ORG
A3	An important problem in a country that is aging: identifying frailty through the Clinical Frailty of 9 Scale	Cemile Özsürekci, Cafer Balcÿ, M. Cemal Kÿzÿlarslanoÿlu, Hatice Çalÿÿkan, RanaTuna Doÿrul, Gözde ÿengül Ayçiçek, Fatih Sümer, Erdem Karabulut, Burcu Balam Yavuz, Mustafa Cankurtaran & Meltem Hal Gülhan	This study was designed as a cross-sectional study	Frailty is a geriatric syndrome that develops as a result of cumulative decline in many physiological systems and results in increased vulnerability and risk of outcomes Adverse. The Clinical Frailty Scale (CFS) was validated as predictor of adverse outcomes in the community elderly and evaluates items such as comorbidity, cognitive impairment and inability. Our goal was to study the concurrent and construct validity and reliability of the 9-point CFS in the Turkish population	The mean age of the 118 patients was 74.5 years (min: 65 max: 88) and 64.4% were female. The agreement of the CFS and the opinion of an experienced geriatric medicine specialist was excellent (Cohen's K: 0.80, p < 0.001). The agreement of the CFS and Fried Frailty phenotype was moderate (Cohen's K: 0.514, p < 0.001). The test-retest reliability was very strong (Cohen's K: 0.811, p < 0.001 and Cohen's K: 1.0, p < 0.001, respectively).	CFS seems to be a fast, reliable, and valid frailty screening tool for elderly community residents in the Turkish population.	2019, REGIST RO CLÍNIC O DA BÉLGIC A
A4	Obesity and polypharmacy among African-Americans Elderly: Gender as Moderator and the multimorbid as a mediator	Shervin Assari, CherylWisseh Introduction Keywords: African American; Black; elderly; elderly; use of medications; polypharmacy; body mass index; obesity and Mohsen Bazargan	This is a cross-sectional study	This study aimed to investigate the associations between obesity and polypharmacy (taking more than 5 medicines) among elderly AA. We also tested whether gender moderates and whether multimorbidity (number of DCs) medesa dems this association.	We found a significant association between obesity and polypharmacy in AA women and not in AA men, suggesting that gender moderates this association. AA obese women with obesity have a higher risk of polypharmacy, an association that is mainly due to multimorbidity. There is a need for screening for inadequate polypharmacy in aa older women with obesity and associated multimorbidity	In summary, among the elderly AA, especially women, obesity is associated with polypharmacy, and this association is mainly due to the higher risk of multimorbidity in obese people.	2019, INT.J . AMBIEN TE. RES. PUBLIC HEALTH A

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A5	A practical guide to geriatric syndromes in elderly adults with cancer: a Focus on falls, cognition, polypharmacy, and depression	Allison agnuson, Schroder Sattar, RN, PhD2 ; Ginah Nightingale, PharmD, BCOP3 ; Rebecca Saracino, PhD4 ; EmilySkonecki, PharmD5 ; and Kelly M. Trevino, PhD4	The current cross-sectional study used a comprehensive survey and evaluation of the drugs taken.	This study aimed to investigate the associations between obesity and polypharmacy (taking more than 5 medicines) among elderly AA. We also tested whether gender moderates and whether multimorbidity (number of DCs) measures this association	Geriatric syndromes are multifactorial conditions that are prevalent in the elderly. It is believed that geriatric syndromes develop when individual experiences accumulated deficiencies in multiple systems that compromise their compensatory capacity. In elderly people with cancer, the presence of geriatric syndrome is common and may increase the complexity of cancer treatment. In addition, the physiological stress of cancer and cancer treatment can precipitate or exacerbate geriatric syndromes. Common geriatric syndromes include falls, cognitive syndromes and delirium, depression, and polypharmacy	Geriatric syndromes are prevalent health problems in the elderly, and the presence of a geriatric syndrome may indicate a more limited reserve to tolerate additional stressors. Common geriatric syndromes include falls, cognitive impairment and delirium, depression, and polypharmacy; these conditions are highly relevant for elderly people with cancer. The presence of these conditions can influence the overall ability to tolerate therapy, as well as the quality of life and potential survival. The screening of Geriatric syndromes can be implemented in the cancer environment to identify potential areas of interventions to improve the quality of life and other related results	2019, ASCO EDUCATION BOOK 2019
A6	Associations between Polypharmacy, Self-Assessment health, and depression in elderly African-American Adults; Mediators and moderators	Mohsen Bazargan , James S, Shervin Assari, Hamid Helmi, and Mohammed saqid	The data for this research were collected from a cross-sectional study (research) in the south of Los Angeles.	This study aimed to investigate the associations between polypharmacy (taking more than 5 medicines) and HRS and depression among elderly AA. We tested whether multimorbidity (number of DCs) measures this association and whether gender moderates it.	worst SSR. In the present study, gender altered the association between SSR and polypharmacy. Poor SRH was indicative of higher chances of polypharmacy in AA women, but not in AA men. Gender differences in what SrS reflects are known. It is believed that women's SRS reflects a wider range of factors besides multimorbidity, a phenomenon also called the sponge hypothesis.	AA women with polypharmacy have worse SrS and depression, an association that is partly due to the underlying multimorbidity. There is a need to prevent inadequate polypharmacy in elderly AA, particularly when addressing poor SSR and depression in elderly Women AA with multimorbidity.	2019, NT. J. AMBIEN TE. RES. PUBLIC HEALTH A
A7	Predictors of polypharmacy in the elderly with depressive and anxiety disorders: findings of the DAS study	Nahathai Wongpakaran, Tinakon Wongpakaran, Thanitha Sirirak, Rewadee Jenraumjit, Surin Jiraniramai and Peerasak Lerttrakarnnon	The study analyzed secondary data from the Program of Depressive Disorders, Anxiety Disorders, Risk of Suicide and Associated Factors among Thai Elders (DAS Study), funded by the National Council of Thailand Search	The aim of this study was to investigate potential predictive psychosocial factors related to polypharmacy in Thai elderly	The 803 participants consumed an average of 2.13 drugs prescribed daily (SD 1.46, median = 2). The largest group used 3 drugs (18.6%). Predictors associated with polypharmacy in the logistic regression model included hypertension (OR = 1.985, 95% CI = 1.420–2.775), anxiety disorder (OR = 4.402, 95% CI = 2.630–7.367), number of diseases (OR = 2.140, 95% CI = 1.874–2.445), (OR = 1.470, 95% CI = 1.080–2,001), diabetes mellitus (OR = 1.864, 95% CI = 1.122-3.098) and dyslipidemia (OR = 0.511, 95) %CI = 0.325-0,803).	The prevalence of polypharmacy among the Thai elderly was relatively high compared to other related studies. Several aspects should be taken into consideration before starting additional medication in elderly patients. In addition to the number of physical diseases that lead to polypharmacy, general practitioners should be aware of anxiety, depression, and personality traits of neuroticism that may be related to polypharmacy. Early detection of this condition, as well as non-pharmacological intervention, maybe a way to help reduce polypharmacy in the elderly	2018, WONGP AKARA N ET AI. Mr. BMC GERIAT RIA
A8	Factors of risk for polypharmacy in the elderly in a primary care environment: a study transverse	Suleyman Ersoy and Velittin Selcuk Engin.	This is a cross-sectional study	Polypharmacy (PP) is a clinical challenge in the elderly. Therefore, it is important to evaluate daily drug use (CDD) and its relationships. The health services in this study, our objective was to evaluate CDD and investigate risk factors for higher DDC among the elderly in a study. primary care environment.	These universes showed relationships between DDC and various demographic and clinical parameters. The variables that remained significant in the last stage of stepwise linear regression analysis were metabolic syndrome, chronic pain, incontinence, increased serum creatinine level, increased geriatric depression scale scores, gastric disorders and neutrophil/lymphocyte ratio.	Along with certain chronic conditions, depressive symptoms and an inflammatory marker (neutrophil/lymphocyte ratio) were significantly and independently related to higher DDC. Longitudinal and larger studies are needed to further explore multifaceted relationships pp	2018, INTERVENÇÕE S CLÍNICAS NO ENVEL HECIMENTO
A9	Prevalence of polypharmacy among the elderly based on the Research Health, Aged Nto and Retiree in Europe	Lu ́ÿsMidao, Anna Giardini, EnricaMenditto, Przemyslaw Kardas,El'ÿsio Costa	Multidisciplinary database		Previous studies have shown that polypharmacy is a very common condition in the elderly population, with a prevalence between 27% and 59% in primary care patients, and 46% to 84% in hospital care.	In conclusion, our results show that polypharmacy is a highly prevalent condition in the elderly population with rates between 26.3% and 39.9% in Europe and Israel.	2018, ARQUIVOS DE GERONTOLOGI A E GERIATRIA

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A10	The effect of depression and side effects of antiepileptic drugs on lesions in patients with epilepsy	S. Gur-Ozmena, Mulaa,b,c, N. Agrawala,b,c, HR Cocka,c,D . Lozsadia, c and TJ von Oertzenc, d		This study aimed to investigate the relationship between lesions, side effects of antiepileptic drugs (AD) and depression.	Among 407 patients (243 women, mean age 43.1 years), 71 (17.4%) reported injuries since the last visit. A two-step cluster analysis revealed two clusters with the main cluster (53.5% of the injured group) showing a total score for LAEP ÿ45, a Positive Neurological Disorder Depression Inventory for Epilepsy screening, and the presence of AED polytherapy. A total score for LAEP ÿ45 was the most important predictor	Treatment with antiepileptic drugs should be reviewed in patients who report lesions to assess the potential contribution and burden of side effects of AEA.	2017, EAN
A11	Relationship between depression and medicine in incidence of falls in people with late effects of poliomyelitis	Carolyn P. Da Silva PT, DSc, NCS, Bianca Zuckerman DPT & Rhoda Olkin PhD	The research was developed with the contribution of members of the International Network of Directors of Polio Clinics	The aim of this study was to determine whether the falls in polio survivors, with or without postpolio syndrome (PPS), are related to the number of medicines are taken, use of antidepressant or psychoactive medicines or self-report of depression	Multiple logistic regression was significant (p = 0.023) and indicated that depression is a significant predictor (p = 0.012) of falls in polio survivors with and without PPS. The total number of antidepressant or psychoactive medications or medications used was not related to the incidence of falls. Screening and routine treatment for depression can be an aspect of fall prevention that can be implemented through primary care.	Depression seems to be accurately identified and treated by medication among polio survivors, although depression may be occurring under treatment. We call for further screening for depression in primary care environments to help reduce the incidence of falls in this population.	2017, FISIOTE RAPIA THEORY AND PRÁTIC A
A12	Late depression and the association with multimorbid an e polypharmacy: a cross-sectional study	François Schellevisc,d, KatjaTaxise, Huibert Burgera and Floor Holvasta,Bernard A van Hattema JudithSinnigeb Peter FM Verhaaka	This is a cross-sectional study	Determine the associations between patients diagnosed with delayed depression in primary care and multimorbidity and polypharmacy.	We included 4,477 patients; 1,512 had a record of depression, 1,457 had other mental or psychological health diagnoses, and 1,508 were controls. Depressed patients had a 16% [prevalence ratio (PR) 1.16; 95% confidence interval (95% CI) 10%–24%] a higher rate of chronic somatic disease and higher chances of multimorbidity (OR 1.55; 95% CI 1.33–1.81) compared to controls. There were no differences between depressed patients and patients with other psychological diagnoses. Compared to controls, depressed patients had a 46% rate (95% CI 39– 53%) higher chronic drug use, and higher chances of polypharmacy (OR 2.89; CI 95% 2.41-3.47). Depressed patients also had higher rates of chronic drug use and higher chances of polypharmacy compared to patients with other psychological diagnoses (PR 1.26; OR 1.75; both P < 0.001)	Late depression in primary care patients is associated with more chronic drug use, in addition to increased rates of comorbid somatic diseases. General practitioners should consider drug reviews to avoid unnecessary drug-related problems in these patients.	2017, FAMILY PRACTICE

Source: Prepared by the authors, 2022.

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5 DISCUSSION

For discussion on the subject, it was categorized into two parts: actions to detect polypharmacy and depressive symptoms among the elderly with the use of polypharmacy.

Polypharmacy detection

Several potential factors increase the vulnerability of the elderly to polypharmacy, socioeconomic status, financial difficulties, low health literacy, multiple competing needs, and poor access to health care. The low quality of care established with a wide range of prejudices against elderly people who attend the health system increases the risk of being prescribed various medication regimens as described in A4.

> **A4**- "Compared to whites, the AA elderly are less likely to receive the most effective and up-to-date medication regimens for their health conditions."

It was highlighted in A7 that the origin of the misuse of medications, is inappropriate use and indiscriminate use of various medications, thus including prescription and over-the-counter medications.

> **A7**- "The exact number of drugs indicating polypharmacy has been defined varied, for example, 2 or more 4 or more 5 or more 6 or more, and excessive polypharmacy defined as 10 medications."

In the a7 section, it is possible to have a panoramic view of the population's ignorance and misinformation, which instigates the development of studies, and field research, that seeks to meet this demand for guidance. The fall factor and injuries related to adverse drug and potentially inappropriate events (PIMS), drug interactions (PDDIs), increased hospitalization, and mortality, including decreased cognitive function, are highlighted.

> **A7**- "Polypharmacy is common among the elderly and the prevalence of polypharmacy in the elderly."

The gender issue is a central risk factor that shapes the prevalence of polypharmacy. Several studies are showing that the prevalence of women may have a higher risk compared to men. And some studies indicate that the use of inappropriate medication and the number of health professionals predicted polypharmacy according to A4.

When analyzing A5 some common geriatric syndromes include falls, cognitive syndromes, delirium, depression, and polypharmacy. There are screening tools to identify falls, cognitive problems, polypharmacy, and depression in the elderly.

> **A5**- "It portrays that it is more common to use polypharmacy in elderly people with cancer, with healthy elderly."

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Depressive symptoms among the elderly with polypharmacy use

According to outpatient studies in the elderly who have been prescribed antidepressant, anxiolytic, sedative-hypnotic, or analgesic drugs, it has been growing in the last decade. The increase in polypharmacy in active medications in the central nervous system (CNS) is noticeable.

> **A2**- "Defined by the Beers Criteria as three or more active cns drugs (antipsychotics, benzodiazepines, hypnotic agonists of non-benzodiazepine receptors, selective serotonin reception inhibitors [SSRIs]. "

Studies indicate that opioid prescriptions have been in a general decline in recent years, and rates only increase in prescriptions for benzodiazepines and continuous antidepressants and have continued to increase in primary care visits. The high rate of polypharmacy, together with potential unintentional misuse due to their lack of understanding, is especially about the safety of the elderly confined at home, due to their multiple chronic diseases and associated frailty, as pointed out by A2.

The consumption of medicines without a prescription is a fairly common practice. A study with Turkish elderly reported that only 52.6% of the drugs consumed were prescribed by a doctor, while 21.1% were taken based on their own decisions, in some cases the consumption of the drug was 13.2% by the advice of a friend, 7.9% by a pharmacist and 5.25% by a neighbor or acquaintance, as demonstrated by A12.

> **A12**- "Physicians should receive adequate guidance for the rational management of medical treatment. This is essential to provide information on the relevant risks. "

As the human body ages over the years, its ability to eliminate drugs decreases, so the elderly are more susceptible to the side effects of the treatment that is offered, and thus may increase the risk of developing new health conditions.

> **A12**- "PP, which is included in some criteria of the geriatric syndrome, is not only a problem that often goes unnoticed but also an indicator of morbidity and risk of iatrogenic.

6 CONCLUSION

The present study addressed scientific evidence on the use of polypharmacy in the elderly with depressive symptoms. In the synthesis of the studies, it was perceptive that polypharmacy (PP) is a clinical challenge in the elderly, being important in the daily evaluation of drug use and its relationships and the real need for the drug. Therefore, it is important to review medications consumed by the elderly and better access to evidence-based psychotherapeutic treatments, necessary for these elderly with depression or depressive symptoms. The essential measures are early screening and diagnosis, for efficient implementation and intervention measures, and in this process, nursing is essential in the development of these measures, acting as an educator in health and health promotion. It is possible by the use of technology

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and innovation to facilitate this process of prevention and reeducation in the administration of medicines. The theme is extremely important and requires in-depth studies in the area.

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