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POLYPHARMACY AMONG OLDER PATIENTS ATTENDING SELECTED HOSPITAL OF BHARATPUR METROPOLITAN CITY, NEPAL

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ABSTRACT

Background: Elderly are associated with physiological and pathological changes-places individuals at a higher risk of multimorbidity and treatment-related complications. Today, polypharmacy is the major challenge among the elderly population we aimed to determine the prevalence of polypharmacy and its associated factors among elderly patients. **Methods:** The study was conducted to investigate the Prevalence of Polypharmacy and its associated factor among the elderly patients. Visiting Out Patient Department in Bharatpur hospital, Bharatpur, Nepal and College of Medical Sciences, Bharatpur, Nepal, between April to July 2019. The face-to-face interview adopted in 330 elderly patients with random sampling technique SPSS version 20.0 was used for Data analysis. **Results:** A total of 330 patients met the inclusion criteria and majority of them were female (50.90%) and (53.33%) was in the age group 65-70had illiterate (71.50%) and married (68.50%), belongs to Hindu(91.0%). The prevalence of polypharmacy was found to be 34.5 % while it is associated with number of comorbidities (p=0.000) and it was not associated with age, gender, level of education (p=0.811), (p=0.068) and (p=0.132) respectively. **Conclusion:** The study concluded that elderly people with illiteracy leads to polypharmacy. Elderly people who have multiple diseases have higher incidence of polypharmacy.

Keywords: elderly, polypharmacy, Comorbidity.

INTRODUCTION

Background of Study

World Health Organization has evaluated that in every nine people there is one elderly people, i.e. of age 60 years or older [Hajjar*et al.,* 2007] According to WHO, polypharmacy is defined as the concurrent use of five or more different prescription medications. Previous studies have provided evidence that the probability of ADRs among geriatric patients is estimated at 6% when two drugs are taken, increases to 50% when five drugs are taken, and becomes 100% when eight or more drugs are taken simultaneously [Chumney and Robinson, 2006]. Polypharmacy has also been documented as a major risk factor for ADRs in the developed countries [Hohl *et al.,* 2001]. Ageing has a strong impact on the pharmacokinetics and pharmacodynamics, comorbidity, and patterns of medication that may contribute to an increased risk of adverse events. A study from Malaysia found a higher incidence of polypharmacy among geriatric inpatients (62.8%) on admission and it was associated with the high prevalence of cardiovascular diseases and diabetes mellitus [Najjar *et al.,* 2010]. There are various sign and symptom due to polypharmacy in elderly patients, which can be Tiredness, sleepiness, or decreased alertness, constipation, diarrhea, or incontinence, loss of appetite, confusion, falls, depression or lack of interest in your usual activities, weakness, tremors, visual or auditory hallucinations, anxiety or excitability, and/or dizziness [Abdulraheem and Polypharmacy, 2013]. The most common adverse effect reported by polyopharmacy is dry mouth the medications that may cause a dry mouth includes cardiovascular medications (diuretics, calcium channel blockers), anti-depressants and antipsychotics, sedatives, central analgesics, anti-Parkinson's medications, anti-allergy medications, and antacids [American Dental Association]. Evaluation of polypharmacy is of important concern in older population so as to avoid all the possible adverse effects. Identifying and avoiding the polypharmacy can lead to better outcomes in the elderly patients and also helps in improving the quality of life. The objective of this study was to evaluate the frequency of polypharmacy and to assess the relationship between polypharmacy and potential adverse outcomes within a sample of elderly population served by the Hospital of Bharatpur Metropolitan City, Nepal

METHODS

Study Design:

This study was carried out in Bharatpur hospital, Bharatpur, Nepal and College of Medical Sciences, Bharatpur, Nepal. The study was carried out in the Outpatient Department (OPD). The research was approved by Instructional Review Committee (IRC). The survey method was the basis for the determination of the characteristics of the population. The Random samples of 330Elderly patients were enrolled in the study those who are diagnosed with any one among hypertension, diabetes, COPD and thyroid disorder. Data was collected using a validated questionnaire. The questionnaire

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consisted of five sections. The first section is included questions related to socio-demographic characteristics of the older patients, second section included disease information, third section included medication information, fourth section included laboratory information and the fifth section included Polypharmacy. Questionnaire was designed and validated through our supervisor and channel of experts.

Statistical analysis:

The statistical analysis was performed using IBM-SPSS version 20 software. Descriptive analysis was performed. Categorical or qualitative variables were expressed in terms of percentage and frequencies. Numerical or quantitative variable was expressed in terms of central tendency and dispersion.

RESULTS

Out of 330 patients, the majority (n=168) of them were females. The majority 176 (53.33%) of the respondents was in the age group 65-70 followed by 123 (37.27%) and 31 (9.39%) were in the age group 71-80 and > 80 respectively. Regarding the marital status, the majority of them were married 226 (68.50%) and least 104 (31.5%) were others. Most of 313 (94.80%) respondents were Hindu and least 1 (0.3%) was Christian. Majority of them were uneducated 236 (71.50%)

Table 1: Sociodemographic characteristics of respondents

N = 330

Characteristics	Frequency	Percent
Age		
65-70	176	53.33
71-80	123	37.27
>80	31	9.39
Sex		
Male	162	49.09
Female	168	50.90
Marital status		
Married	226	68.50
Others	104	31.50
Level of Education of Patients		
No Schooling	236	71.50
Primary	57.09	17.30
Secondary	24.09	7.30
Post Secondary	4.95	1.50
Bachelor and above	7.92	2.40
Religion		
Hinduism	313	91.0
Muslim	2	0.60
Buddhism	14	4.24
Christianity	1	0.30

Table 2: Occurrence of Polypharmacy

Out of 330 patients the prevalence of polypharmacy was found to be 114 (34.5%)

Table No.2: Presence of Polypharmacy

Polypharmacyy	Frequency	Percentage
Yes	114	34.5%
No	216	65.5%

There were 34.5% out of 330 prescriptions involved polypharmacy followed by 65.5%, 33.6% and 0.9% involved non-polypharmacy, minor polypharmacy and major polypharmacy respectively.

TYPES OF POLYPHARMACY	FREQUENCY	PERCENTAGE
NON POLYPHARMACY (0-4)	216	65.5%
MINOR POLYPHARMACY (5-9)	111	33.6%
MAJOR POLYPHARMACY (≥10)	3	0.9%

Table No.4: Association between Sociodemographic characteristics of respondents with type of polypharmacy.

The polypharmacy was not associated with age (p= 0.811), sex (p=0.068), Education level (p=0.605), Chronic condition (p=0.132)

N=330

Characteristics	Number of medications			P
	Non PP	Minor PP	Major PP	
Age (Year)				0.811
65-70	116	51	0	
71-80	86	54	2	
>80	14	6	1	
Sex				0.068
Female	116	53	0	
Male	100	58	3	
Level of education				0.605
No schooling	153	80	3	
Primary	43	15	0	
Secondary	13	11	0	
Post secondary	4	1	0	
Bachelor and above	4	4	0	
Chronic Conditions				0.132
Hypertension	49	17	0	
Diabetes	22	20	0	
COPD	92	54	2	
Thyroid disorder	53	20	1	

Relationship between Comorbidity and Polypharmacy

Polypharmacy was associated to Comorbidity (p=0.000)

Presence of comorbidity	Non pp	Minor pp	Major pp	P value
Yes	106	90	3	.000
No	108	21	0	
Total	214	111	3	

DISCUSSION

A total of 330 participants in my study with 50.90% being females and 49.09% males which are in line with other studies from Nepal [Shrestha, 2019]. This is also consistent with another study on the predictors of medication adherence in the elderly, and on the effects of age, sex, knowledge, attitudes, and comorbidities on medication adherence [Balkrishnan, 1998]. which indicated that the prevalence of high blood pressure among Nepalese particularly women was very high. This study, revealed that the majority of the patients 53.33% were in the age group of 65-70 years, followed by 37.27 % were 71-80 year, > 80 years 9.39%. The results show that the COPD risk is majorly in the patients of elderly age. In this study the prevalence of polypharmacy was found to be 114 (34.5%), The Ahmed B et al., 2014,showed 70% of occurrence of polypharmacy [Ahmed *et al.,* 2014]. The study done by shrestha et al., 2019also showed that the prevalence of polypharmacy in the intervention group was 24.7% [Shrestha *et al.,* 2021] while in the control group 30.7%, According to Jin H et al., 2016, showed that frequency of dosing was inversely related to medication adherence [Hohl *et al .,* 2001] and Claxton AJ et al., 2001,showed similar result that previous study, which showed that the a more frequent dosing schedule was associated with a negative effect on adherence[Cunningham *et al.,* 1997]. In this present study

Elderly patients said that simple medication is easy to understand and remember some of them told that they forget to take medication due complex therapy and polypharmacy. There were various reasons for non-adherent, this current study showed that about 15% of elderly patients were not taking medicine on time due to financial problem few of them due to distance of hospital and pharmacy to their home. In this study showed that 34.5% of total prescriptions included polypharmacy in which 33.6% prescription included minor and 0.9% prescription included mjaor polypharmacy respectively. The occrrence of polypharmacy in this study was lower than the study conducted in Teaching Hospital in Nepal which was 86.66% [Basnet *et al.,* 2016], study conducted in older patients with atrial fibrillation which was 94.8% [15-18]and study conducted in Dhulikhel Hospital-Kathmandu University Teaching Hospital which was 76% [SAPKOTA *et al.,* 2011]. This study found no association between polypharmacy and age, sex, education level or non-communicable disease, similar result was reported by Negar G et al 2015 [WASTESSON *et al.,* 2019] and previous study done by Linjakumpu T et al 2002 found association between polypharmacy and sex [Hamilton, 2003], level of education and /or history of diabetes and hypertension by Moen J et al 2009 [Jin *et al.,* 2016], the present study showed that the polypharmacy among the elderly patients was found to be associated with number of comorbidities (p= 0.000), Identifying and avoiding the polypharmacy can lead to better outcomes in the elderly patients and also helps in improving the quality of life. Medication review is an essential part in the elderly patient to avoid adverse effects that can be caused due to polypharmacy.

Conclusion

We found nearly half of the population experience of PP in the two different hospital of Bharatpur chitwan, Nepal. This was related to age, educational level and number of prescribers and the burden of disease. PP was found to be associated with number of comorbidities.

Limitation of the study

Results may not be generalizable to seniors who chose not to participate and attending different centers, or to seniors in different counties. Only two study site with less sample size.

Declarations

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Authors' Contributions

RSP and SS are the principal investigator and conceived the study. All authors collaboratively designed the study. Data acquisition, analysis and interpretation performed by RSP and SS. All authors contributed in manuscript writing and critically reviewed by SS. All authors read and approved the final manuscript.

Ethics approval and consent to participate

Ethical approval was obtained from the Institutional Review Committee of IRC permission was obtained from the CMSprior to data collection.

Consent for publication

Not applicable

Competing interests

The authors declare that they have no competing interests.

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