

# Prevalence of Perceived Stress among Polypharmacy Patients: A Cross-Sectional Study

Ghazwan Alhashem<sup>1</sup>

<sup>1</sup>AlSafwa University College, Karbala, Iraq

DOI: 10.55489/njcm.151220244677

## ABSTRACT

**Background:** The concurrent use of 5 or more medications is the most recognized definition of polypharmacy. Many physical and mental consequences could be associated with polypharmacy, and stress is no exception. The objective of the current study is to investigate the prevalence of perceived stress among polypharmacy individuals and its association with sociodemographic factors.

**Method:** A cross-sectional study was carried out between September and December at 6 major hospitals and several private clinics in Iraq. Study participants were required to have at least 2 chronic diseases and be using 5 or more drugs for at least 90 days, aged 50 years or older. Sociodemographic data and the Perceived Stress Scale 10 (PSS-10) were completed by participants. The Mann-Whitney test was used to compare the median PSS-10 scores for different sociodemographic factors.

**Results:** Among the 235 polypharmacy participants, the median PSS-10 score was 20. Moreover, the median PSS-10 score was significantly higher among female participants, those with an increased number of chronic diseases, the presence of adverse effects, and participants with financial issues related to healthcare ( $P < 0.05$ ).

**Conclusion:** The present findings indicate a moderate perceived stress score among polypharmacy participants, highlighting the need for strategies to alleviate stress alongside personalized medication management.

**Keywords:** PSS-10, Polypharmacy, Perceived stress, Adverse effects, Adherence

## ARTICLE INFO

**Financial Support:** None declared

**Conflict of Interest:** None declared

**Received:** 13-09-2024, **Accepted:** 13-11-2024, **Published:** 01-12-2024

**Correspondence:** Ghazwan Alhashem (Email: g.alhashem@alsafwa.edu.iq)

**How to cite this article:** Alhashem G. Prevalence of Perceived Stress among Polypharmacy Patients: A Cross-Sectional Study. Natl J Community Med 2024;15(12):1077-1080. DOI: 10.55489/njcm.151220244677

**Copy Right:** The Authors retain the copyrights of this article, with first publication rights granted to Medsci Publications.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Share Alike (CC BY-SA) 4.0 License, which allows others to remix, adapt, and build upon the work commercially, as long as appropriate credit is given, and the new creations are licensed under the identical terms.

www.njcmindia.com | pISSN: 0976-3325 | eISSN: 2229-6816 | Published by Medsci Publications

## INTRODUCTION

Polypharmacy is generally defined as the concurrent usage of multiple medicines.<sup>1</sup> Although there is no globally accepted definition of polypharmacy, the administration of five or more medications is the most commonly recognized definition.<sup>1,2</sup> In the older population, multimorbidity is common, which often requires multiple medications. People with polypharmacy and multimorbidity are at higher risk of adverse events and interactions with other drugs and diseases.<sup>3</sup> Many consequences are suggested to be associated with polypharmacy including medical, cognitive, economic, Physical, poor adherence, increased hospitalization and mortality.<sup>1,2,4,5</sup>

To our knowledge, no study has investigated the relationship between perceived stress and polypharmacy in the Middle East. Bazargan and Assari study suggested an association between polypharmacy and psychological distress, noting that higher psychological distress, was found among participants using 10 or more medications.<sup>6</sup> Furthermore, a study that applied the EuroQol-5 dimensions scale showed that polypharmacy participants had a worse quality of life including in psychological domains.<sup>4</sup> However, another study on quality of life among polypharmacy participants found that the psychological domain of EuroQol-5 was not negatively associated with polypharmacy.<sup>7</sup> Filling this gap in the literature is important. The current study aims to investigate the prevalence of perceived stress among polypharmacy individuals and its association with sociodemographic factors.

## METHODOLOGY

This cross-sectional study was conducted between Sept and Dec 2023 in Kerbala and Babil provinces, Iraq. The study sites included an internal medicine private clinic, the internal medicine ward of a hospital, a consultant clinic in Imam Al-Hussain Medical City, Imam Al-Hassan Al-Mujtaba Teaching Hospitals, Al Safeer Hospital in Kerbala, and Murjan Teaching Hospital and Imam Al-Sadiq Hospital in Babil.

**Participants:** Participants were required to have at least two chronic diseases and be using five or more medications for at least 90 days. They were all aged 50 years or older. Patients with diagnosed mental health issues or those using medications that could alter or affect mood were excluded from the study. Informed consent was obtained from all participants after explaining the study's purpose. The study protocol was approved by the Ethical and Scientific Committee at AlSafwa University College with an approval letter number of 5433K2/June/2024.

**Measures:** Participants completed a written form collecting sociodemographic data, including age, gender, number of chronic diseases, smoking status, residence status, living conditions, number of medications used, occupation, side effects, financial is-

sues, and medication adherence. Perceived stress levels were assessed using the Perceived Stress Scale (PSS-10), which asked about participants' thoughts and feelings over the past month, focusing on the degree of stress and lack of control experienced. The PSS-10 uses a 5-point Likert scale ranging from 0 (never) to 4 (very often).<sup>8,9</sup> The scale includes positive questions (items 4, 5, 7, and 8) and negative questions (items 1, 2, 3, 6, 9, and 10).<sup>10</sup> The Arabic version of the PSS-10, which has shown an adequate level of stress estimation, was used in this study.<sup>8</sup>

**Statistical analysis:** All statistical analyses were performed using Statistical Package of Social Science (SPSS) version 26 (Armonk, New York, USA). Stress levels are presented in median, and other sociodemographic data are expressed in absolute numbers and percentages. Mann-Whitney test was done to compare the median scores of PSS-10 for sociodemographic factors.

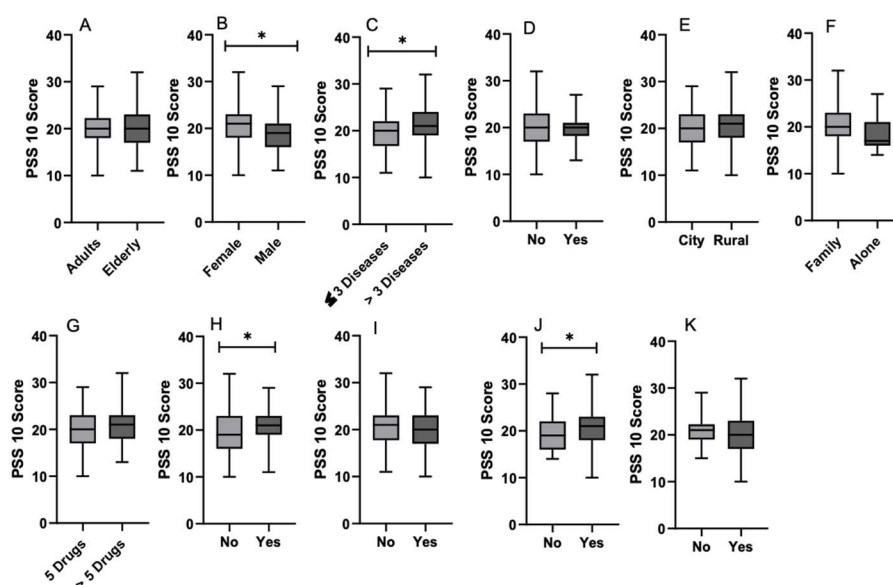
**Approval of institutional ethical review board:** The study protocol was approved by the Ethical and Scientific Committee at Al-Safwa University College.

## RESULTS

The median level of stress among study participants is 20 which refers to a medium level of stress. Table 1 summarizes the sociodemographic data of study participants. There are statistically significant differences in median stress levels in the female gender, increase in the number of diseases, presence of side effects and financial problems.

**Table 1: Sociodemographic data of the study**

Variable	Participants (n=325) (%)
<b>Age group</b>	
Adult < 65	134 (57)
Elderly ≥65	101 (43)
<b>Gender</b>	
female	187 (79.6)
male	48 (20.4)
<b>Number of Drugs</b>	
> 5 drugs	84 (35.7)
5 drugs	151 (64.3)
<b>No. of Chronic diseases</b>	
> 3 diseases	93 (39.6)
≤ 3 diseases	142 (60.4)
<b>Smoker</b>	28 (11.9)
<b>Residence</b>	
city	161 (68.5)
rural	74 (31.5)
<b>Living Condition</b>	
alone	11 (4.7)
family	224 (95.3)
<b>Earning</b>	145 (61.7)
<b>Financial issues due to healthcare</b>	173 (73.6)
<b>Adhere to medication</b>	213 (90.6)
<b>Has Side effects</b>	127 (54)
<b>Stress severity</b>	
High	17 (7.2)
Moderate	210 (89.4)
Low	8 (3.4)



**Figure 2: the differences between sociodemographic data and stress levels. Mann Whitney test. \*Indicate a significant difference. (A) age group, (B) gender, (C) number of diseases, (D) Smoking, (E) residence, (F) living conditions, (G) number of drugs, (H) Side effects, (I) Occupation, (J) financial issues, (K) patient adherence**

## DISCUSSION

The present study evaluates the prevalence of perceived stress levels among polypharmacy patients. It has shown that the vast majority of study participants experienced moderate perceived stress with a median score of 20 out of 40. To our knowledge, this is the first study to investigate the level of perceived stress among polypharmacy patients in Iraq. Many worldwide studies showed the effects of polypharmacy on quality of life including psychological distress.<sup>4,6,7</sup>

The current study showed that the female participants had a significantly higher PSS score than male participants. Generally, perceived stress scores are higher in female.<sup>9,11,12</sup> Similarly, studies showed that female polypharmacy showed higher psychological distress than male.<sup>6</sup> and poorer health-related quality of life.<sup>4</sup> However, these studies utilized different scales and measures various areas related to mental health. Many confounding variables and factors may contribute to these findings; thus, further research is recommended to gain a better understanding of perceived stress and gender relationships.

The present study results showed that participants with more chronic comorbidities had significantly higher PSS scores. Since the current study participants are aged 50 years or more, increasing age is associated with increased multimorbidity and polypharmacy.<sup>3</sup> A study<sup>13</sup> showed that an increase in multimorbidity's and chronic diseases is associated with higher PSS scores. Furthermore, patients with more chronic diseases are more likely to use more medications and are consequently affected by their clinical mental and physical consequences.<sup>1,6,14</sup> Our

study results are consistent with previously published literature and suggest a high likelihood of perceived stress with an increase in both medications and chronic diseases.

Polypharmacy, especially in older adults, increases the risk of adverse effects.<sup>15</sup> Regarding perceived stress and the adverse effects of polypharmacy, our study indicated that participants who reported the presence of adverse effects had significantly higher PSS scores compared to individuals who did not experience any side effects. This study did not focus on the specific types of adverse reactions that participants experienced, the potential medications responsible, or whether these effects were caused by other conditions such as disease states or aging. To our knowledge, no other study has focused on the relationship between adverse drug reactions and perceived stress.

Literature research suggests a relationship between stress and financial problems.<sup>16</sup> Our study found that participants experiencing financial problems reported significantly higher stress levels compared to those without such issues. A study by Yoshida et al.<sup>17</sup> has also shown that polypharmacy could make individuals more susceptible to stress, which supporting our findings. Additionally, other studies<sup>6,18</sup> reported that increased financial problems are associated with greater psychological distress among polypharmacy patients. Thus, it is clear that stress and polypharmacy may be closely related in such patients.

## LIMITATIONS

The current study has several limitations. Firstly, due to its cross-sectional design, no causal relationships

can be established. Secondly, all responses were based on self-report questionnaires, which may introduce response bias. Thirdly, the number of medications was self-reported by participants without verification from other sources, such as pharmacy databases or patient records. Lastly, data collection was limited to the middle region of Iraq, making it challenging to generalize the findings.

## CONCLUSION

This study showed that Iraqi patients with polypharmacy experience moderate levels of perceived stress. Specifically, female polypharmacy patients, increased comorbidities, financial issues related to healthcare, and adverse effects appear to be associated with higher perceived stress levels. These observations highlight the need for strategies to alleviate stress alongside to personalized medication management.

## ACKNOWLEDGEMENT

The author would like to acknowledge Zain Alabdein Haider, Ameer Qais, and Mohammed Jawad for their valuable assistance in data collection.

## DATA AVAILABILITY STATEMENT

The data analyzed in this study can be provided by the corresponding author upon a reasonable request.

## GENERATIVE ARTIFICIAL INTELLIGENCE USE DECLARATION

This manuscript was written entirely by the author without use of generative artificial intelligence tools.

## REFERENCES

- Pazan F, Wehling M. Polypharmacy in older adults: a narrative review of definitions, epidemiology and consequences. *Eur Geriatr Med*. 2021;12(3):443-452. doi:10.1007/s41999-021-00479-3
- Delara M, Murray L, Jafari B, et al. Prevalence and factors associated with polypharmacy: a systematic review and Meta-analysis. *BMC Geriatr*. 2022;22(1):601. doi:10.1186/s12877-022-03279-x
- Mortazavi SS, Shati M, Keshtkar A, Malakouti SK, Bazargan M, Assari S. Defining polypharmacy in the elderly: a systematic review protocol. *BMJ Open*. 2016;6(3):e010989. doi:10.1136/bmjopen-2015-010989
- Montiel-Luque A, Núñez-Montenegro AJ, Martín-Auriales E, Canca-Sánchez JC, Toro-Toro MC, González-Correa JA. Medication-related factors associated with health-related quality of life in patients older than 65 years with polypharmacy. *PLoS*

- ONE*. 2017; 12(2): e0171320. doi:10.1371/journal.pone.0171320
- Alhashem G, Alyasery R, Al-Hassan S. The association between depressive symptoms and medication adherence among polypharmacy older adults. *Eur Psychiatry*. 2024;67(S1):S363-S363. doi:10.1192/j.eurpsy.2024.748
- Assari S, Bazargan M. Polypharmacy and Psychological Distress May Be Associated in African American Adults. *Pharmacy*. 2019;7(1):14. doi:10.3390/pharmacy7010014
- Van Wilder L, Devleeschauwer B, Clays E, Pype P, Vandepitte S, De Smedt D. Polypharmacy and Health-Related Quality of Life/Psychological Distress Among Patients With Chronic Disease. *Prev Chronic Dis*. 2022;19:E50. doi:10.5888/pcd19.220062
- Chaaya M, Osman H, Naassan G, Mahfoud Z. Validation of the Arabic version of the Cohen perceived stress scale (PSS-10) among pregnant and postpartum women. *BMC Psychiatry*. 2010;10(1):111. doi:10.1186/1471-244X-10-111
- Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav*. Published online 1983:385-396.
- Choi J. Impact of Stress Levels on Eating Behaviors among College Students. *Nutrients*. 2020;12(5):1241. doi:10.3390/nu12051241
- Graves BS, Hall ME, Dias-Karch C, Haischer MH, Apter C. Gender differences in perceived stress and coping among college students. *PLoS ONE*. 2021;16(8):e0255634. doi:10.1371/journal.pone.0255634
- Taylor JM. Psychometric analysis of the Ten-Item Perceived Stress Scale. *Psychol Assess*. 2015;27(1):90-101. doi:10.1037/a0038100
- Vancampfort D, Koyanagi A, Ward PB, et al. Perceived Stress and Its Relationship With Chronic Medical Conditions and Multimorbidity Among 229,293 Community-Dwelling Adults in 44 Low- and Middle-Income Countries. *Am J Epidemiol*. 2017;186(8):979-989. doi:10.1093/aje/kwx159
- Khezrian M, McNeil CJ, Myint PK, Murray AD. The association between polypharmacy and late life deficits in cognitive, physical and emotional capability: a cohort study. *Int J Clin Pharm*. 2019;41(1):251-257. doi:10.1007/s11096-018-0761-2
- Wu Y, Levis B, Riehm KE, et al. Equivalency of the diagnostic accuracy of the PHQ-8 and PHQ-9: a systematic review and individual participant data meta-analysis. *Psychol Med*. 2020;50(8):1368-1380. doi:10.1017/S0033291719001314
- Adams DR, Meyers SA, Beidas RS. The relationship between financial strain, perceived stress, psychological symptoms, and academic and social integration in undergraduate students. *J Am Coll Health*. 2016;64(5):362-370. doi:10.1080/07448481.2016.1154559
- Yoshida Y, Ishizaki T, Masui Y, et al. Association of personality traits with polypharmacy among community-dwelling older adults in Japan: a cross-sectional analysis of data from the SONIC study. *BMC Geriatr*. 2022;22(1):372. doi:10.1186/s12877-022-03069-5
- Bazargan M, Smith J, Saqib M, Helmi H, Assari S. Associations between Polypharmacy, Self-Rated Health, and Depression in African American Older Adults; Mediators and Moderators. *Int J Environ Res Public Health*. 2019;16(9):1574. doi:10.3390/ijerph16091574