

## Use of polypharmacy and herbal medication on quality of life in elderly patients at Okmeydani hospital's polyclinics in Istanbul, Turkey

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### Abstract

**Objective:** To determine what should be done as a preventive medicine physician by analysing the effect of polypharmacy and herbal treatment.

**Methods:** This survey-based, cross-sectional study was carried out at Istanbul Okmeydani Training and Research Hospital, Istanbul, Turkey, from February to May 2015, and comprised patients using two or more medicines at full strength for at least 240 days. The patients were classified into two groups. Group A comprised those who were using less than 4 medications (at least 2), while group B comprised patients using more than 4 medications. The short version of World Health Organisation's quality-of-life questionnaire was applied. SPSS 22 was used for data analysis.

**Results:** Of the 350 participants, 106(30.3%) were receiving herbal treatment while 244(69.7%) had no such treatment. Group B patients had meaningfully lower scores for body, spiritual, social and external environment ( $p=0.001$ ). Moreover, the patients having no herbal or supportive treatment scored significantly higher in the physical, spiritual, social relations and external environment ( $p=0.001$ ). In group A, patients receiving no herbal treatment scored meaningfully higher in all fields, including physical ( $p=0.009$ ), social relations ( $p=0.043$ ) and external environment ( $p=0.001$ ).

**Conclusion:** Old age, living alone, level of education, having a regular monthly income, the number of drugs used, chronic diseases and herbal treatments affected the life quality.

**Keywords:** Elderly, Life quality, Polypharmacy, Herbal treatment. (JPMA 67: 895; 2017)

### Introduction

The term "polypharmacy" comes from the Greek words "poly" (many) and "pharmacy" or "pharmakon" (medication). It is defined as the simultaneous use of multiple medications. In the field of general medicine, the term polypharmacy appears as the simultaneous use of medications often by elderly people. It can be defined as the concurrent use of multiple medications.<sup>1</sup> Sources show differences as to how many medications are involved in the definition of polypharmacy. Although there is no certain consensus regarding the definition of "polypharmacy", which refers to the use of multiple medications by elderly people, it is generally defined as the concurrent utilisation of more than one medication. Different literatures suggest many different definitions of the term polypharmacy. These definitions include the use of 2 or more medications for at least 240 days,<sup>2</sup> use of 2 or more medications in combination,<sup>3</sup> use of four or more medications as defined by the National Service Framework (NSF),<sup>4</sup> or concurrent use of 5 or more medications.<sup>5</sup>

Defined as the concurrent use of multiple medications despite the availability of differential descriptions, some studies divide polypharmacy into minor (two medications) and major (more than four medications) polypharmacy.<sup>6</sup>

The population which is mostly exposed to the undesired effects of polypharmacy is the elderly. Diseases like coronary heart disease, hypertension, diabetes mellitus, etc. are frequently encountered as people get older, and these are considered to be diseases which lead to the treatment of elderly people by multiple medications for an extended time period.<sup>7</sup> Each medication used brings along a risk of side effect. So much so that medication side effects take place among preventable serious health problems following heart failure, breast cancer, hypertension and pneumonia.<sup>8</sup>

Senility is a complex process which involves such variables as genetics, lifestyle, chronic diseases, etc.<sup>9</sup> Although not considered a disease itself, senility is a process of loss in the body system efficiency of people at the age of 65 or above and also a relative loss in their ability of adjusting to their environment.<sup>10</sup> The World Health Organisation (WHO) defines senility as "a gradual decrease in one's ability of adjusting to their

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environment.<sup>11</sup> In the elderly, the increase of chronic diseases results in an increasing need for medications which, in turn, cause medication interactions and risks of side effects.<sup>12,13</sup> The current study was planned to determine what should be done as a preventive medicine physician by analysing the effect of polypharmacy and herbal treatment.

## Subjects and Methods

This survey-based, cross-sectional study was carried out at the Istanbul Okmeydani Training and Research Hospital, Istanbul, Turkey, from February to May 2015, and comprised patients using two or more medicines at full strength for at least 240 days. Istanbul Okmeydani Training and Research Hospital is giving education in many specialty branches in the field of medicine and is one of the biggest hospitals of Istanbul. Although the significant part of the patient population is composed of the people coming to big city districts having high socio-economic level like Sisli and Besiktas, but there are quite a few applications from the district having middle socio-economic level like Beyoglu and also from the districts having low socio-economic level like Kagithane.

Individuals attending Okmeydani Hospital Clinic of Family Medicine for various reasons were included. The sample size was determined at 95% confidence interval and  $\alpha=0.05$  by using power analysis and sample size programme. The sample size was increased to prevent data loss.

Patients aged above 65 years, having no disabilities like neurological disorders, mental retardation or hearing loss which could create communication problems, using two or more medicines at full strength for at least 240 days, and were willing to participate in the study were included.

In contrast, patients who were aged below 65 years, had the above-mentioned disabilities, using two or more medicines for less than 240 days, and were not willing to participate in the study were excluded.

Informed consent was obtained from the patients in accordance with the Helsinki declaration. The patients were classified into two groups. Group A comprised those who were using less than 4 medications (at least 2), while group B comprised patients using more than 4 medications. In our study, we made efforts to define polypharmacy in the widest sense possible and, in this context, we included in the study only those patients who used 2 or more medications concurrently for at least 240 days. However, we classified those who used minimally two and maximally 4 medications within the scope of

"minor polypharmacy" and those who used more than 4 medications within the scope of "major polypharmacy". In the questionnaire form, social demographic characteristics of the patients were questioned and the short form of quality of life (QOL) scale developed by the WHO (WHOQOL-BREF) was used. The Turkish version of WHOQOL-BREF scale was prepared in 1999 by Canan Fidaner et al.<sup>14,15</sup>

SPSS 22 was used for data analysis. For descriptive data, mean values, standard deviation, median, minimum, maximum, frequency and percentages were used. The distribution of the variables was measured by the Kolmogorov-Smirnov test. The Kruskal-Wallis and Mann-Whitney U tests were used in the analysis of quantitative data.  $P<0.05$  was considered statistically significant.

## Results

Of the 350 participants, 274(78.3%) had regular monthly incomes while 76(21.7%) did not. Besides, 10(2.9%) patients never married, 194 (55.4%) were married, 6(1.7%) were divorced, 7(2%) were living separately and 133(38%) were widows (Table).

Although the bodily and environmental scores of female patients who lived alone were significantly low ( $p<0.05$ ), their scores in psychological and social relationship characteristics did not differ significantly ( $p>0.05$ ). As for those who lived with their families, the bodily, psychological, social and environmental scores of those who took their own medications were significantly higher than those of who took their medications from someone else ( $p<0.05$ ).

The bodily, psychological, social and environmental scores of group B patients were significantly higher ( $p<0.0001$ ).

In group B, the bodily, psychological, social and environmental scores decreased as their age increased ( $p<0.05$ ).

In group A, the bodily, psychological, social and environmental scores decreased as their age increased ( $p<0.05$ ).

In group B, the psychological score decreased as educational level increased ( $p<0.05$ ). The bodily, social and environmental scores did not differ significantly ( $p>0.05$ ).

In group A, the psychological, bodily, social and environmental scores increased as the educational level increased ( $p<0.05$ ). In group B, the bodily, social and environmental scores did not differ significantly ( $p<0.05$ ).

**Table:** Socio-demographic characteristics and use of herbal treatment.

		Living alone		Living with Family		Total	
Gender	Man	65	56%	125	53,4%	190	54%
	Woman	51	44%	109	46,6%	160	46%
Age	65-74	51	44%	126	53,8%	177	50,6%
	75-84	41	35,3%	67	28,6%	108	30,9%
	85 ≤	24	20,7%	41	17,5%	65	18,6%
Education Level	No Education	36	31%	51	21,8%	87	24,9%
	Primary School	72	62,1%	168	71,8%	240	68,6%
	Secondary School or High School	4	3,4%	13	5,6%	17	4,9%
	University	4	3,4%	2	0,9%	6	1,7%
Marital Status	Unmarried	10	8,6%	—	—	10	2,9%
	Married	8	6,9%	186	79,5%	194	55,4%
	Divorced	3	4,3%	3	1,3%	6	1,7%
	Divided	5	4,3%	2	0,9%	7	2%
	Widowed	90	77,6%	43	18,4%	133	38%
Do you have a regular income?	Yes	81	69,8%	193	82,5%	274	78,3%
	No	35	30,2%	41	17,5%	76	21,7%
Do you use herbal treatment or support?	Yes	52	44,8%	54	23,1%	106	30,3%
	No	64	55,2%	180	76,9%	244	69,7%
Number of chronic diseases	3 ≥	38	32,8%	49	20,9%	87	24,9%
	3 <	78	67,2%	185	79,1%	263	75,1%
The number of drugs used	4 <	67	57,8%	85	36,3%	152	43,4%
	4 ≥	49	42,2%	149	63,7%	198	56,6%
Are you getting your own medicine?	Yes	101	87,1%	184	78,6%	285	81,4%
	No	15	12,9%	50	21,4%	65	18,6%

When the life quality of group B patients was evaluated based on whether or not they took their medications themselves, there was no significant difference in their bodily, psychological, social and environmental scores ( $p > 0.05$ ).

In group B, the bodily scores of those who had a regular monthly income increased ( $p < 0.05$ ), whereas in group A social relationship scores of those who had a regular monthly income increased ( $p < 0.05$ ).

In group B, the bodily, psychological, social relationship and environmental scores were significantly higher in those who had less than 3 chronic diseases compared with those who had more than 3 chronic diseases ( $p < 0.05$ ). No significant difference was determined in group A ( $p > 0.05$ ).

In group B, the bodily, psychological, social relationships and environmental scores of those who did not receive any herbal treatment were significantly higher ( $p < 0.0001$ ).

When the life quality scores of group A patients were assessed, those who did not receive any herbal treatment had significantly higher scores in terms of bodily

( $p = 0.009$ ), social relationship ( $p = 0.043$ ) and environmental ( $p < 0.0001$ ) characteristics.

## Discussion

According to the 2014 data of the Turkish Statistical Institute, 43.6% of the elderly population were male while 56.4% of them were females.<sup>16</sup> We found that 54% of the elderly individuals who were assessed within the scope of our study were males and 46% of them were females. Eighty two patients began to answer the questions of the study questionnaire but could not complete it, and 65 (approximately 80%) of these 82 individuals were females.

In a study which was carried out in Edirne in 2007, 17.3% of the elderly population lived alone.<sup>17</sup>

It was determined in another study which was made in Pasinler, Erzurum, in 2000, that 3.4% of the elderly group lived alone.<sup>18</sup>

However, in a study which analysed the polypharmacy status and complementary treatment utilisations of the patients who applied to the family medicine polyclinic of Sisli Etfal Hospital, Istanbul, in 2012, the rate of elders who lived alone was 31%.<sup>19</sup> The rate of elderly patients in our

own study was determined to be 30.1%. An increase in the number of elderly people who live alone is likely in the socio-cultural environments where extended family structure is deserted.

In a life quality study carried out by Kirchengast et al. using the WHOQOL-BREF scale to assess gender differences in elderly people in Australia, it was shown that being a female at the age of 70 or above decreased life quality.<sup>20</sup>

It was found in our study in parallel to the previous studies that life quality scores decreased as the age advanced. Although, in our study, the bodily and environmental scores of the women who lived alone were significantly lower, their psychological and social relationships scores were not significantly different compared with the scores of men who lived alone. In the case of those women who lived with their family, the environmental and psychological scores were lower than those of men. It was shown in many studies that gender is an important factor which influenced life quality and it was found that life quality scores of women were lower than those of men.<sup>21-25</sup>

It was determined in the study by Lee et al. that the life quality of elderly individuals living alone was lower than that of those who lived with their spouse or children.<sup>24</sup>

The negative impact of living alone on one's life quality was also shown in our study confirming the findings of previous studies.

In a study by Oza et al. using the WHOQOL-BREF life quality scale, it was demonstrated that the bodily and social relationships scores were inversely related with the number of medications used and that the pharmacy was an independent risk factor.<sup>26</sup>

Although psychological score decreased as educational level increased in the group who used more than 4 medications in our study, the bodily, social relationships and environmental scores of those who used more than 4 medications did not differ significantly. But in the case of those who used 4 or less medications, as educational level increased, the psychological, bodily, social relationships and environmental scores also increased.

When the life quality of those who took more than 4 medications was evaluated based on whether they took their medications themselves, there was no significant difference in their bodily, psychological, social and environmental scores. It was determined that the bodily, social relationships and environmental scores decreased

as age advanced among those who used 4 or less medications.

In a study by Yazgan et al.,<sup>27</sup> the average number of daily medications and the total number of diseases made a negative influence on bodily and psychological scores. It was determined in the regression analysis carried out in the same study that the total number of diseases had a significant influence on the bodily score.

When the life quality scores of the group who used more than 4 medications were assessed according to the number of their chronic diseases, the bodily, psychological, social relationship and environmental scores were significantly higher in those who had less than 3 chronic diseases compared with those who had more than 3 chronic diseases. No significant difference was determined among those who used 4 or less medications.

The substances that herbal medications contained, their amounts and effects are not clear. It is not known which substances will get in the circulation in what amount in the case such products are used. They can also frequently interact with the medications they are used in combination with and cause serious side effects or lead to an extreme increase or cancellation in the effect of the medication used.<sup>28</sup>

In our study, the rate of those who took herbal treatments or auxiliary treatments was found to be 30.3%. When the life quality scores of those who used more than 4 medications were assessed based on whether they received any herbal treatment or auxiliary treatment, the bodily, psychological, social relationships and environmental scores of those who did not receive any herbal treatment were significantly higher.

When the life quality scores of those who used 4 or less medications were assessed based on whether they received any herbal treatment or auxiliary treatment, those who did not receive any herbal treatment had significantly higher scores in terms of bodily, social relationships and environmental characteristics although no difference was found in terms of psychological characteristics.

Herbal preparations and products which are consumed as tea, which are considered to be non-toxic because they are natural, can actually create harmful effects in those individuals who use a single or multiple medications. They can lead to a decrease in the efficiency of the primary treatment or an excessive therapeutic response.<sup>29</sup> It was shown in many studies that herbal products influenced medication metabolism

that occurs through microsomal enzymes in the liver.<sup>30</sup> So, as a number of the medications used increase, it is very likely that these interactions will increase and therefore the treatment of those patients who have chronic diseases will be adversely influenced by this condition. In the current study, in the context of which we studied the influence of polypharmacy on life quality, we found that the life quality scores of those who used herbal medications were significantly lower.

Findings of our study showed that life quality is influenced by advance age, living alone, educational level, availability of a regular monthly income, the number of medications used, the number of chronic diseases suffered, and herbal treatments. Along with the advancing age, the life quality of individuals gets worse as children leave their house, spouses pass away, the number of chronic diseases increases, bodily functions are gradually lost and professional life ends. Consequently, they remain away from social life and their income level decreases. So employment opportunities may be created and help individuals alleviate their solitude and participate in social life in some way. Through various projects that can be developed in this context, we can prevent the elderly from losing their sense of productivity, ensure that they feel themselves better, and thus increase their life quality.

It was determined that herbal treatments decreased life quality, especially in those patients who used more than 4 medications (major polypharmacy), that the rate of auxiliary herbal treatment utilisation was higher in those who had 3 or more chronic diseases, and that those who used non-prescription drugs utilised more herbal treatments. Herbal treatments are marketed or perceived as "harmless herbal/natural products". The interaction of herbal products with medications and its possible side effects are ignored. It is very important that patients are informed about such products within the context of preventive medicine.

One of the limitations of the current study was that its findings could not be generalised as it was performed in one hospital.

## Conclusion

Old age, living alone, level of education, having a regular monthly income, the number of drugs used, chronic diseases and herbal treatments affected the life quality.

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**Conflict of Interest:** None.

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