






Impact of pharmaceutical care intervention on health-related quality of life in hemodialysis patients in Benghazi

Maryam S.E. Hussein¹ , Hiba Alshami^{1*} , Eyad I.M. Amer² 
Ali A. Eltarhoni²  and Sofian F. Almadani² 

¹ Anesthesia and Emergency Medicine Department, Faculty of Medical Technology,

² Faculty of Pharmacy, Libyan International Medical University, Benghazi, Libya

*Author to whom correspondence should be addressed

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Abstract: Hemodialysis patients suffer from poor health-related quality of life which results in a higher risk of hospitalization and mortality. This study investigates the importance of pharmaceutical care and the role of pharmacists for hemodialysis patients to optimize drug therapy, minimize drug-related problems and thereby improve their health-related quality of life. The study was conducted to evaluate the impact of pharmaceutical care interventions on the health-related quality of life of hemodialysis patients in Benghazi, Libya. A randomized control study was carried out after getting ethical approval from the committee of the hospital. Health-related quality of life was assessed using the SF-36 instrument for all the patients (n=80). Among them, 40 patients have received normal care along with a brief medication review and counselled by pharmacists for two months. Then, health-related quality of life was assessed again for those 40 patients who received the pharmaceutical care. Data was analyzed using an appropriate method. The results showed that the quality of life for hemodialysis patients was poor in both physical and emotional aspects. After the implementation of appropriate pharmaceutical care for the patients, their quality of life improved significantly. Health-related quality of life is an important determinant of treatment effectiveness in dialysis patients.

Introduction

End-stage kidney disease (ESKD) refers to the final stage of chronic kidney disease (CKD) when kidneys no longer function at a level needed for survival. It is highly prevalent internationally and has become a major public health issue associated with a negative impact on the patient's life [1]. Kidney transplantation in Libya is limited owing to the lack of availability of suitable a living-related donor. Most of the patients with ESKD within Libya Remain dialysis-dependent [2, 3]. Libya has a relatively high prevalence and incidence of dialysis-treated ESKD. The prevalence of dialysis-treated ESKD in Libya is 624 per million population [3]. 85.0% of the prevalent patients were aged below 65 years and 58.0% were male [4]. The hemodialysis patients (HD) suffer from poor health-related quality of life (HRQoL) which results in a higher risk of hospitalization and mortality [5, 6]. Hemodialysis process is considered as a complicated procedure for patients that requires frequent visits to hospitals or dialysis centers, mainly three times a week, thus implying substantial changes in the normal way of patients' living [7]. Many studies have revealed that there is a lack of knowledge, attitude,

and practice regarding the drugs, disease and lifestyle changes among CKD patients with HD [8, 9]. Pharmaceutical care (PC) is the direct interaction between pharmacist and patient. In order to improve the therapeutic outcomes and patient compliance, a pharmacist promotes adequate follow-ups, provides counseling and thereby improves the quality of life (QoL) of the patient [10]. Health education is needed for patients to assist them in self-care. In addition to self-care, motivation plays an important role among dialysis patients [5, 7]. Patients need updates on issues of drugs, disease and lifestyle changes appropriate for the failed renal function [11]. This study was conducted to evaluate the QoL of HD patients in three different centers in Benghazi and to identify the impact of PC intervention on the HRQoL of HD Libyan patients.

Materials and methods

This study was planned to assess the impact of PC on the HRQoL among HD patients. Thus, a randomized control study was carried out after getting ethical approval from the ethical committee of Hospital administration (2020/4) at different HD centers in Benghazi, Libya (Kidney Center and Eleithy Polyclinic). The duration of the study was from December 2020 until June 2021. Firstly, the data was collected from 80 HD patients using the reliable and validated Arabic version of the SF36 questionnaire (12). The questionnaire consists of 36 items divided into eight scales: Physical Functioning (PF): 10 items, Bodily Pain (BP): 3 items, Social Functioning (SF): 2 items, General Health Perception (GH): 5 items, Role-physical (RP): 4 items, Role-emotional (RE): 3 items, Vitality (VT): 4 items and Mental Health (MH): 5 items. From these factors, item scores are coded, summed and transformed to a scale ranging from 0 (worst health status) to 100 (best health status). After collecting data from 80 patients, 40 patients of them were randomly selected to receive pharmaceutical care such as motivation and patient education regarding knowledge about disease, medications, lifestyle changes, nutritional information and medication review from March 2021 until the end of June 2021. After two months of follow-up, the questionnaire was distributed again to them (40 patients) to compare the results before and after the PC intervention. The data was analyzed by descriptive statistics Excel sheet. The demographic profile of all the patients was described using percentage and frequency for the categorical variables and means for the continuous variables. To assess the item analysis, the mean of each item was calculated and transformed to a percentage by computed scale scores by the following equation: $[\text{scale} = ((\text{mean of all items} - 1) / 4) * 100]$. The scale scores ranged from 0-100. Lower scores indicated worse health status or negative outcomes while higher scores indicated better health status or more positive outcomes.

Results

In this study, **Figure 1** shows the patients' gender which indicates the males are almost twofold of the females (70.0% male and 30.0% female). **Figure 2** shows that the range of patients' qualifications (degree of education) is nearly equal in percentage among the patients, high school education is 35.0%, bachelor's degree is 26.0% and secondary school education is 24.0%, respectively. **Figure 3** shows the age of the participant patients. Thus, the most age range for the patients is between 41 years and 60 years old which accounts for 61.0% while less than 40 years account for less than 20.0% as over 60 years old. In **Figure 4**, the lowest scales were both roles physical and role of emotional aspects and accounted for 44.3 and 49.6, respectively of HRQoL in the HD patient. Also, this study's mean vitality QoL score was 54.0 which is only slightly more than half of the QoL score in a healthy human. The other scale is higher than 50.0. With regard to the patients who received pharmaceutical care, **Figure 5** shows that the gender percentage distribution of the 40 patients was found to be 72.0% male and 28.0% female, with males higher than females by two and a half fold. **Figure 6** shows that the higher percentage of patients' education levels (degree of qualification) are in high school 28.0%,

bachelor's degree (university) 28.0% and secondary school 22.0%, respectively. **Figure 7** shows that the age range for the 40 patients is between 41 years - 60 years old which accounted for 58.0%.

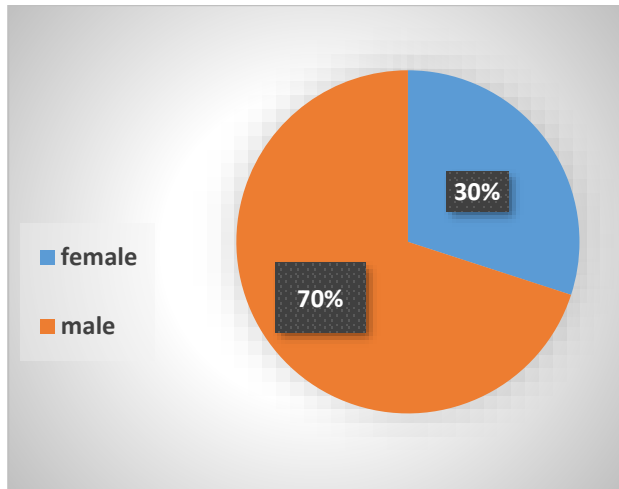


Figure 1: Gender distribution of the patients

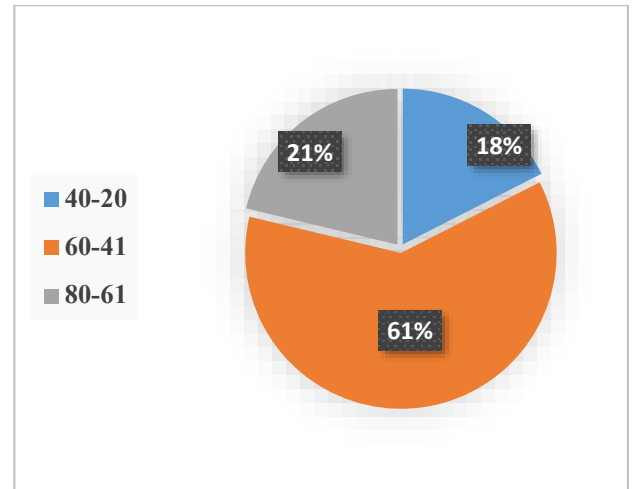


Figure 3: Age distribution of the hemodialysis patients

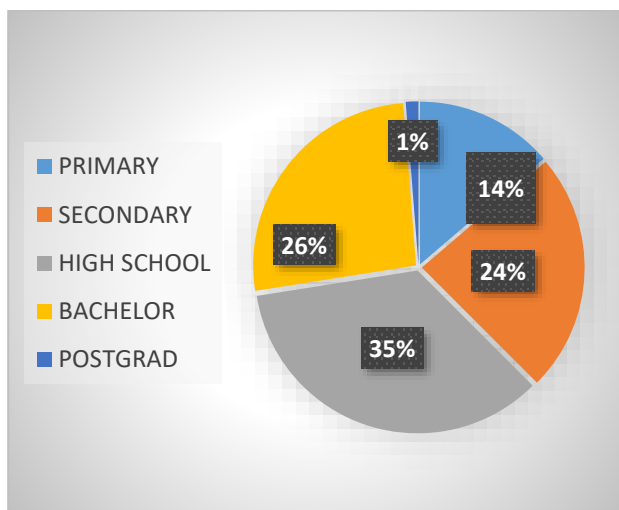


Figure 2: Education levels of hemodialysis patients

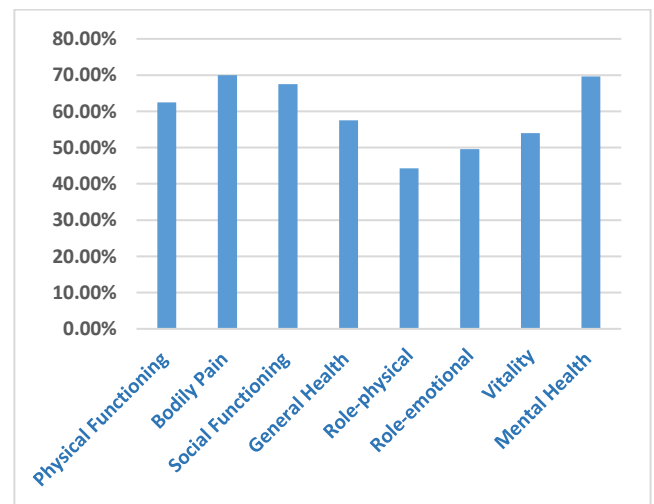


Figure 4: Quality of life of hemodialysis patients

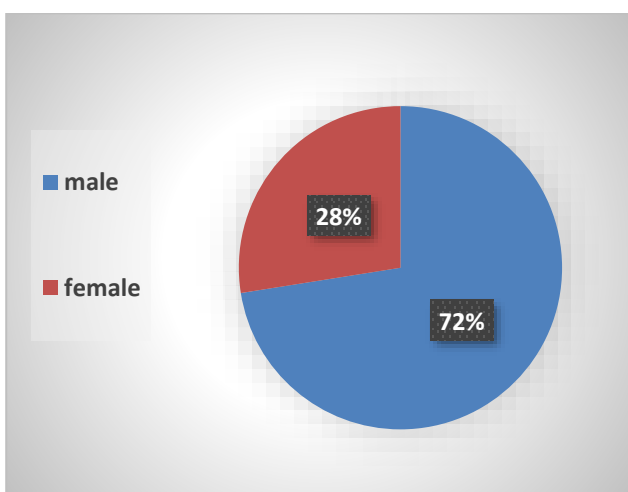


Figure 5: Gender distribution for patients under pharmaceutical care

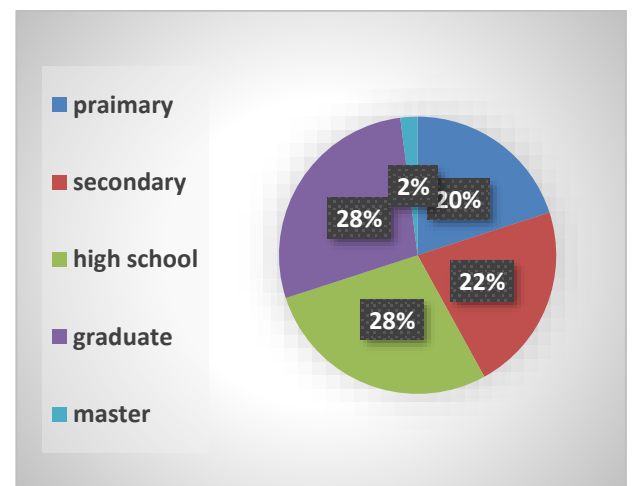


Figure 6: Education level for patients with pharmaceutical care

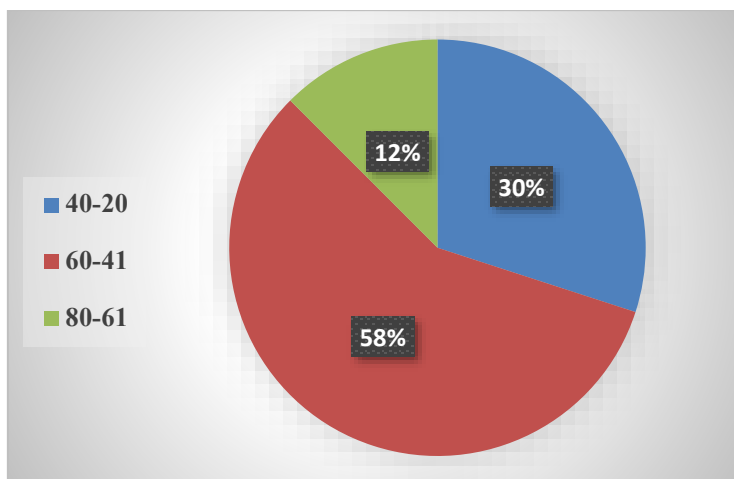


Figure 7: Age distribution for patients with pharmaceutical care

About the quality of Life for 40 HD patients before and after pharmaceutical care, **Figure 8** shows the quality of life before and after pharmaceutical care for 40 HD patients who received motivation and patient education regarding knowledge about disease, medications, lifestyle changes, nutritional information and medication review. The results show that the lowest scales before pharmaceutical care is the role physical aspect of HRQoL. Also, the mean vitality and role emotional QoL score were slightly more than half of the QoL scores in a healthy human. The other scale is higher than 50. The results show also that the QoL after pharmaceutical care is better than before pharmaceutical care.

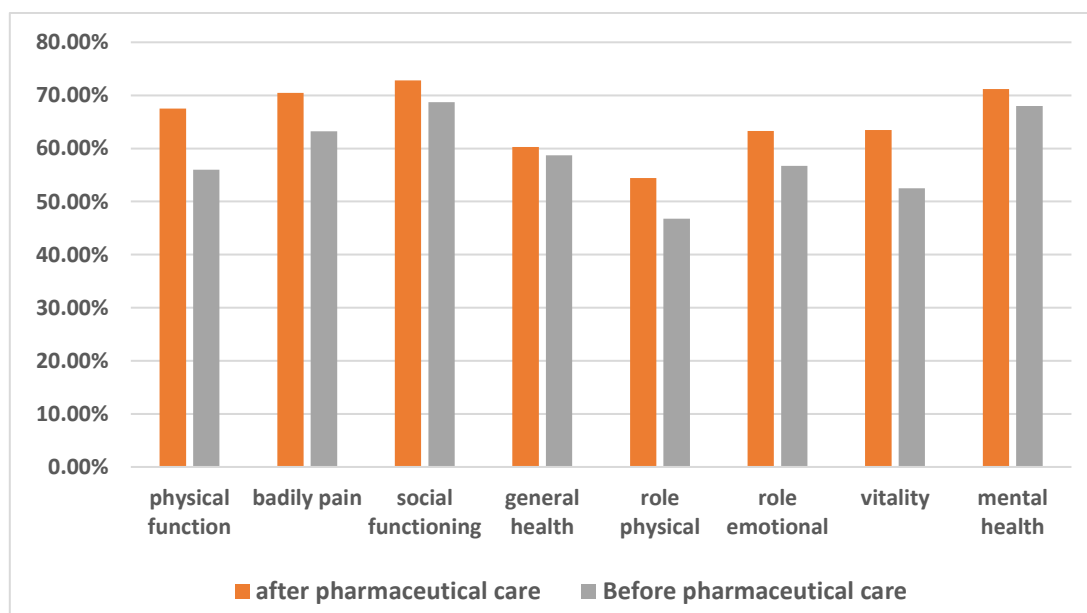


Figure 8: Quality of Life for HD patients before and after pharmaceutical care

Discussion

Pharmaceutical care is a comprehensive patient education system serving in the areas of drug, disease, nutritional and lifestyle information to empower the patient with self-management of his or her condition. In this study, the largest proportion (61.0%) of the patients was between 41 years and 60 years old, with 70.0% of the patients being male. The study further reveals that these patients' role physical is 44.3 and role emotional is 49.6 which is less than half of the function of a normal human being which is 100. This shows that the



burden of the disease seems very severe. This study's mean validity QoL score was 53.33 which is only slightly more than half of the QoL score in a healthy human. The same findings have been revealed in other published studies among dialysis patients in Oman and Malawi [6, 13]. Another study in Japan found that physical QoL became worse as dialysis vintage lengthened. In contrast, mental QoL declined over time within a relatively short period among older maintenance HD patients [14]. Regarding the impact of PC on the QoL of HD patients, the current study found that the QoL after PC is better than before care. The same finding regarding the impact of patient counseling on the QoL of HD patients found that the impact of patient counselling in the QoL of HD patients indicated a significant improvement in each domain after counselling [15]. Other study conducted in India revealed that the HRQoL scores were significantly improved over time in the domains noticed with regard to the physical functioning, general health, emotional well-being, social functioning, symptom/problem list, and effects of kidney disease in all three centers of PC group compared to usual care group. Thus, PC provided by a trained pharmacist had a positive impact in the HRQoL of HD patients [16]. Other published study enables the demonstration and application of a PC program among stroke patients to prevent complications to improve HRQoL. This study indicates that PC can be performed in hospital and community settings as it provides more benefits and positive impact on patient's HRQoL [17]. Healthcare providers should be aware of a low HRQoL among HD patients. Several studies have provided insight into several associations between patient variables such as demographics, and clinical factors and their HRQoL is highly recommended because this type of study reveals some significant results that can be taken into consideration when dealing with HD patients. Future research should be aimed at understanding healthcare professionals' perceptions and practices of assessing medication adherence in dialysis patients that may guide intervention to resolve the issue of medication non-adherence which leads to poor HRQoL [18].

Conclusion: Health-related quality of life is an important determinant of treatment effectiveness in dialysis patients and the major scales were physical and emotional aspects of HRQoL in HD patients. Thus, this study evaluated the impact of PC on QoL of Libyan HD patients and showed QoL after pharmaceutical care is better than before pharmaceutical care.

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Ethical issues: Including plagiarism, informed consent, data fabrication or falsification and double publication or submission were completely observed by the authors.

Data availability statement: The raw data that support the findings of this article are available from the corresponding author upon reasonable request.

Author declarations: The authors confirm that all relevant ethical guidelines have been followed and any necessary IRB and/or ethics committee approvals have been obtained.

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