Quality of Life and its predictors among Qatari Elderly Attending Primary Health Care Centers in Qatar

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From the Editor

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In this issue various topics relevant to primary health care were discussed including HIV, elderly care, use of ACT and safety of hydroxyurea in sickle cell disease.

Alzahrani H.M, et al, reviewed the existing knowledge, attitude and practices of HCWs towards HIV. A cross-sectional study was conducted in primary health care centers in Abha and Khamis Mushait cities of Aseer region, southwestern Saudi Arabia. All HCWs (physicians, nurses, lab technicians and dentists) were invited to participate in the study. A validated self-administered structured questionnaire was used to collect data about HCWs' personal and professional characteristics; knowledge of HIV infection and transmission; attitudes towards HIV/AIDS patients and practices. A total of 372 HCWs were included in the study. Out of them 23.9% were unable to identify tattooing and ear piercing as methods for transmission. Considerable proportion failed to mention blood transfusion (3.8%), unprotected sex (6.7%) and unclean needles (4.0%) as possible methods for disease transmission. Additionally, 36.8% of HCWs have a misconception that kissing could transmit HIV and about misbelieved that sharing eating and drinking utensils (23.1%), swimming pool (18.8%) and living with AIDs patients (17.5%) could transmit infection. Stigmatizing attitude was detected. The authors concluded that, poor knowledge and stigmatizing attitude toward HIV patients are evident HCWs. Health education programs should be adopted to improve HCWs knowledge about transmission mode and combat HIV stigma.

Alshamali, M.H et al; conducted a cross-sectional study at 14 randomly selected Primary Health Care Centers in Qatar to assess QOL and some of its determinants among 672 Qatari aged 60 years or more. Convenience cluster sampling technique, an Arabic structured interviewing questionnaire were used. QOL was assessed using an Arabic version of the WHO-BREF questionnaire with a tested specific QOL-old add-on module. The higher the domains and total scores, the better the QOL. Around three quarters of males had good to very good QOL, while nearly the same percentage of females had fair to poor QOL. All the elderly had from fair to very good ADL% and most of them were in the fair/good level for the IADL%. Social activity was significant correlates with QOL. Gender, educational level, income sufficiency, number of chronic diseases, perceived general health and IADL% were the significant predictors for the total QOL. QOL among the participants was average. Physical domain had the highest mean score, while the social domain had the lowest. Gender and chronic co-morbidities, were significant predictors of elderly QOL.

Mojtabayi, M et al; look at the effect of Acceptance and Commitment Therapy (ACT) on reducing depression symptoms in people with epilepsy. This research was semi-experimental and it contained a pre-test-post-test and a control group at convenience which was based on the results of Beck Depression Inventory (BDI). A total of 30 patients having epilepsy and depression symptoms were selected from among the people having epilepsy and referring to the Epilepsy Association in Tehran (2013). They were randomly divided into two groups of experimental (15 persons) and control (15 persons). Acceptance and Commitment Therapy was done in 8 sessions of 60-90 minutes in the experimental group and the control group did not receive any interventions. Pre-test and post-test scores were analyzed by one-way covariance (ANCOVA) for both groups. The results of this research showed that the difference between the experimental and control groups in the depression variable was significant with the confidence interval of $F = 87.433$. Moreover, the anxiety scores of the experimental group were significantly decreased ($P = 0.000$) compared to the control group. This suggests that Acceptance and Commitment Therapy (ACT) is effective in reducing the symptoms of depression in people with epilepsy.

Helvaci*, M.R et al ; looked at the safety of hydroxyurea in sickle cell diseases (SCDs). The study was performed between March 2007 and September 2013. The study included 337 patients (169 females). Mean number of painful crises per year was decreased with hydroxyurea (10.3 versus 1.7 crises per year, p<0.000). Mean severity of painful crises was decreased, too (7.8/10 versus 2.2/10, p<0.001). Although body weight, hematocrit (Hct) value, and mean corpuscular volume (MCV) increased, white blood cell (WBC) and platelet (PLT) counts and direct bilirubin, total bilirubin, and lactate dehydrogenase (LDH) values of serum decreased (p<0.000 for all). We detected hepatotoxicity in 13 acute painful crises (two females and 11 males) among 1.211 episodes, totally (1.0%). So it was significantly higher in males (6.5% versus 1.1%, p<0.001). All of them healed completely with withdrawal of all of the medications but not hydroxyurea alone. The solitary adverse effect of hydroxyurea was bone marrow suppression with prominent anemia in higher dosages. It was detected in seven females (4.1%) and nine males (5.3%, p>0.05), and they completely healed with transient withdrawal and decreased dosages thereafter.

The authors concluded that Hydroxyurea decreases frequency and severity of painful crises, WBC and PLT counts, direct and total bilirubin, and LDH values of serum, whereas it increases body weight, Hct value, and MCV. The rare (1.0%) and reversible hepatotoxicity during acute painful crises may not be related with hydroxyurea alone, and the bone marrow suppression with prominent anemia in higher dosages may be the solitary adverse effect of the drug.

A paper from Iran looks at the status of women in Baluchi epics and shows that women once occupied a higher status than perhaps they do now.

Two case studies, authored by academic teams at the University of Melbourne, Australia have been made available by medi+WORLD International.

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Knowledge, Attitude and Practice of Health Care Workers Towards HIV Patients at Primary Health Care level in southwestern Saudi Arabia: Twenty-five years after the initial report

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Abstract

The objective of the present study was to critically review the existing knowledge, attitude and practices of HCWs towards HIV. A cross-sectional study was conducted in Primary Health Care centers in Abha and Khamis Mushait cities of Aseer region, southwestern Saudi Arabia. All HCWs (physicians, nurses, lab technicians and dentists) were invited to participate in the study. A validated self-administered structured questionnaire was used to collect data about HCWs' personal and professional characteristics; knowledge of HIV infection and transmission; attitudes towards HIV/AIDS patients and practices. A total of 372 HCWs were included in the study. Out of them 23.9% were unable to identify tattooing and ear piercing as methods for transmission. A considerable proportion failed to mention blood transfusion (3.8%), unprotected sex (6.7%) and unclean needles (4.0%) as possible methods for disease transmission. Additionally, 36.8% of HCWs have a misconception that kissing could transmit HIV and about misbelieved that sharing eating and drinking utensils (23.1%), swimming pool (18.8%) and living with AIDs patients (17.5%) could transmit infection. Stigmatizing attitude was detected. In conclusion, poor knowledge and stigmatizing attitude toward HIV patients are evident in HCWs. Health education programs should be adopted to improve HCWs' knowledge about transmission mode and combat HIV stigma.

Key words: HIV/AIDS; healthcare workers, Knowledge, attitude, stigma, Saudi Arabia

Background

According to recent WHO statistics, there were globally approximately 36.7 million people living with the human immunodeficiency virus (HIV) at the end of 2016(1). A recent report by the Saudi Ministry of Health in 2018, including data obtained from 20 HIV treatment centers located in different regions of the Kingdom, showed that there were 6,256 people living with HIV and knew their status by the end of 2017, which is equivalent to 76% of the estimated number of people living with HIV in Saudi Arabia (2).

A study performed in 2015 in Jeddah, Saudi Arabia, among the general population showed lack of proper knowledge about the disease and more than 40% think that HIV positive people should be isolated (3). Similarly, a study among male dental students in Saudi Arabia showed lack of knowledge regarding HIV/AIDS transmission and means for prevention in addition to unfavorable attitudes towards HIV/AIDS individuals (4).

It was well known that the traditional primary health care approach of health promotion and disease prevention that focuses on case-finding, continuity of care and problem resolution, adapts well to HIV/AIDS. Primary care is holistic, patient based, and has as its focus healing rather than cure. Primary care physicians have a role in the prevention of HIV infection, in identifying asymptomatic seropositive people, in offering early therapeutic interventions, in the early detection of opportunistic infections and HIV-related malignancies, and in the ongoing management of chronic ill-health. There is also a role for primary care physicians in the psychosocial management of people with HIV/AIDS, in supporting those close to the patient, and in educating the community in general about the social parameters of HIV/AIDS (5).

In 1995 two published articles addressed the awareness of HIV among primary health care workers in Aseer region, Saudi Arabia. They found massive defects in their knowledge (6, 7). Recent data regarding knowledge, attitude and practices of primary healthcare workers in Saudi Arabia in general and in the Aseer region in particular, are scarce and even lacking. The aim of the present work is to study the current knowledge, attitude and practices (KAP) of primary healthcare workers towards HIV in Abha and Khamis Mushait cities of Aseer region, Saudi Arabia.

Patients and Methods

The present cross-sectional study was conducted in primary health care centers in Abha and Khamis Mushait cities of Aseer region, southwestern Saudi Arabia in 2017. All health care workers (physicians, nurses, lab technicians and dentists) were invited to participate in the study. Administrative personnel not in direct contact with patients' care were not included.

Data were collected through self-administered validated structured questionnaire (4). The questionnaire covered the following four major areas; demographic data including age, sex, and nationality, professional data including type of profession, how long they have been working, have they provided care towards HIV patients. The questionnaire included 14 closed-ended question about knowledge of HIV infection and transmission. The questionnaire also covered attitudes regarding treating HIV patients, the right of health personnel to practice and willingness to treat.

Data were verified, coded and analyzed using the Statistical Package for Social Sciences (SPSS). Frequencies and percentages were used to present the results.

The study protocol was approved by the research ethical committee of King Khalid University (REC#2017-04-03). All the necessary official permissions were obtained before data collection. Written consent was taken from the participants. Collected data were kept strictly confidential and used only for the research purposes.

Results

Description of the Study Sample
The present study included 372 Health Care Workers (HCWs). Almost half of the study sample were from Abha city (199, 53.5%) and the rest were from Khamis Mushait city. The majority of HCWs were females (228, 61.3%) and Saudis (318, 85.5%). The highest frequent age group was 20-30 years (181, 48.7%) followed by 31 to 40 years (149, 40.1%). Dentists represented 47.6% (177) of the study sample followed by physicians (95, 25.5%) and nurses (78, 21.0%). The highest frequent period of work was 5-10 years (160, 43.0%) followed by less than 5 years (105, 28.2%).

Failure to identify the well-known modes of HIV transmission
Table 1 (next page) shows the wrong beliefs among HCWs regarding HIV modes of transmission. Regarding the failure to identify the well-known modes of HIV transmission, the highest failed mode to be mentioned was via tattoos or ear piercing (89, 23.9%). The least unidentified mode was blood transfusion from an infected person (14, 3.8%). On the other hand, unprotected sex and using unclean needles was not mentioned by (6.7 % and 4.0%, respectively). No significant differences (P> 0.05) were found by gender, nationality, age, profession and duration of employment.

Suspecting Incorrect modes of HIV transmission
Regarding incorrect knowledge of modes of HIV transmission, the highest wrong modes mentioned by HCWs was via kissing (137, 36.8%), followed by mosquitos and other insects bites (94, 25.2%) and via sharing plates, cups, and utensils (86, 23.1%). The least mentioned incorrect modes of transmission were via sitting in a hot tub or a swimming pool (70, 18.8%), via living with a person with AIDs (65, 17.5%) and through the air (coughing or

Table 1: Wrong Beliefs in Modes of transmission of HIV as mentioned by PHCCs workers in the study area, 2017

Wrong Beliefs	No (%)
A. Failure to Identify known modes of transmission	
1. Using Unclean syringes or needles	15 (4.0)
2. Unprotected Sexual Intercourse	25 (6.7)
3. Blood Transfusion from an infected person	14 (3.8)
4. Tattoos or ear piercing	89 (23.9)
B. Suspecting incorrect modes of transmission	
1. Kissing	137 (36.8)
2. Insects and Mosquito Bites	94 (25.2)
3. Daily contact and living with infected person	65 (17.4)
4. Eating and using utensils of a case	86 (23.1)

staying in the same room as someone infected with HIV (56, 15.1%). No significant differences (P> 0.05) were found by gender, nationality, age, profession and duration of employment.

Other wrong knowledge mentioned by HCWs were the presence of a vaccine that can stop getting HIV (38, 10.2%) and that the people who have been infected with HIV quickly show serious signs of being infected (63, 16.9%).

Attitudes towards HIV Patients
Regarding attitudes towards HIV patients, the highest frequent response was feeling uncomfortable when eating meals prepared by a person with HIV (209, 56.2%). Almost one out of each ten HCWs (39, 10.5%) stated that HIV patients should be ashamed of themselves, they deserve what they get (32, 8.6%) and only promiscuous people get HIV (28, 7.5%). On the other hand, more than two-thirds of HCWs (295, 79.3%) mentioned that they were empathetic with HIV patients.

Preventive activities during practice
Regarding preventive activities during practice, one-third of HCWs (142, 38.2%) mentioned that spills of blood or body fluids are decontaminated by sodium hypochlorite solution. Two-thirds (267, 71.8%) mentioned that the work provides protective equipment for HCWs to prevent the spread of HIV and identified the use of liquid detergent and running for hand washing to prevent the spread of HIV (243, 65.3%).

Discussion

The present study explored the current status of knowledge and misconceptions of HCWs about HIV transmission in two big cities in southwestern Saudi Arabia. The results of the present study indicate an overall insufficient level of knowledge, inappropriate attitudes and inadequate behavior of health care workers in Abha and Khamis Mushait, of KSA. Similar results were reported 25 years ago(6, 7).

Generally, HCWs' knowledge about the disease transmission was unsatisfactory, as evident by the fact that nearly one quarter of them were unable to identify tattooing and ear piercing as methods for transmission. Also, a considerable proportion (3.8% to 6.7%) failed to mention blood transfusion, unprotected sex and unclean needles as possible sources for disease transmission. Additionally, over one third of HCWs have a misconception that kissing could transmit HIV and about one fifth to one quarter misbelieved that sharing eating and drinking utensils, swimming pools and living with AIDs patients could transmit infection. Similar results of a relatively poor knowledge were found among medical and dental doctors in 4 major cities in Saudi Arabia namely; Jeddah, Riyadh, Dammam and Jizan (8). In the current study, the observed poor knowledge and misconceptions were unrelated to HCWs' gender, age, specialty and duration of employment. The same results were observed in other studies in Saudi Arabia (8), Middle East and North Africa (9, 10). This indicates that the HCWs may be influenced by the cultural preconception that HIV is usually an outcome of immoral sexual relationships such as sexual relationships outside marriage and homosexuality(8-11) rather than their educational background.

The consequence of the reported unsatisfactory knowledge and misconceptions among the studied HCWs was the improper attitude and stigma toward patients living with HIV/AIDS (PLWHA). This was demonstrated by the fact that more than half of the HCWs mentioned that they will feel uncomfortable when eating meals prepared by HIV patients and about one third were not empathetic with HIV patients. Moreover, a considerable proportion (7.5%-10.5%) considered HIV patients are guilty and should be ashamed of themselves. One Saudi study among physicians reported a high proportion of stigmatizing attitude among physicians and attributed this attitude to their poor knowledge of HIV transmission (8). Other studies in India (12), South Africa (13) and a review article (14) explained this attitude by psychological fear of HIV infection as a result of poor knowledge.

The observed proportion of HCWs with judging and blaming stigmatizing attitude toward peoples with HIV/AIDS in the present study can be attributed also to religious factors which consider AIDS as a punishment for immoral sexual behaviors (8, 11, 15, 16). Additionally, a study in another Muslim country in Indonesia reported stigmatizing attitudes among nurses being significantly predicted by education and their HIV training(17). This attitude also was observed in a Chinese study which reported blaming attitude among healthcare workers and related it in some extent to the belief that HIV is a sequence of promiscuity (18).

Unfortunately, the reported poor knowledge and stigmatizing attitude in Saudi Arabia is running in future health care professionals. This was evident in studies conducted among dental, paramedical and medical students in Jazan (19), Taif (20), Abha (4) regions of the country.

The observed poor knowledge and negative attitude of HCWs will eventually affect their practices in the future when dealing with PLWHA and may be an obstacle to the control of HIV in Saudi Arabia (8).

The study showed the availability of protective equipment at primary healthcare services. This will raise the issue of the importance of knowledge and attitude rather than the lack of facilities in combating the hazard of occupational infection in the practice.

Conclusion / Recommendation

The findings of the present study suggest an urgent need for continuous medical education on HIV/AIDS in the southwestern region of Saudi Arabia. To combat HIV infection in the public an intensive educational training should start with the HCWs to improve their knowledge of HIV. More stress should be given to methods of HIV transmission. They should distinguish the well-known modes from the disputed modes. Proper understanding of the epidemiology of HIV/AIDS might impact the HCWs' stigmatizing and discriminatory attitudes observed in the current study towards PLWHA. Good knowledge of prevention of HIV transmission is more likely to reduce the HCWs' stigmatizing attitude and improve their future practices. More qualitative studies are needed to search deeply in underlying reasons for stigmatization of HCWs and deal with the cultural fear.

Limitations of the study include the relatively small number of enrolled HCWs from the total practicing HCWs in KSA.

Conflict of interest
There was no conflict of interest.

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Quality of Life and its predictors among Qatari Elderly Attending Primary Health Care Centers in Qatar

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Abstract

A cross-sectional study was conducted at 14 randomly selected Primary Health Care Centers in Qatar to assess QOL and some of its determinants among 672 Qataris aged 60 years or more. Convenience cluster sampling technique, and an Arabic structured interviewing questionnaire were used. QOL was assessed using an Arabic version of the WHO-BREF questionnaire with a tested specific QOL-old add-on module; the higher the domains and total scores, the better the QOL.

Results: Around three quarters of males had good to very good QOL, while nearly the same percentage of females had fair to poor QOL. All the elderly had from fair to very good ADL% and most of them were in the fair/good level for the IADL%. Social activity was significantly correlated with QOL. Gender, educational level, income sufficiency, number of chronic diseases, perceived general health and IADL% were the significant predictors for the total QOL.

Conclusion: QOL among the participants was average. Physical domain had the highest mean score, while the social domain had the lowest. Gender and chronic co-morbidities, were significant predictors of elderly QOL.

Key words: elderly, quality of life, Qatar

Introduction

Aging populations have become a leading demographic issue in the new millennium. There has been a rapid increase in the elderly population all over the world. By 2050, the world's population aged 60 years and older is expected to total 2 billion, up from 841 million today, and it will be the first time in history where the number of people aged 60 years and older, outnumber children younger than 5 years [1]. The challenge for aging studies is to understand the conditions associated with aging as a positive process and old age as a stage of life in which health, well-being, pleasure and quality of life (QOL) can be increased [2]- [4]. While population aging in the Arab region is not currently of the order of magnitude witnessed in some developed countries such as Japan or Korea, it has already started in a number of Arab countries and is expected to gather momentum in the next 50 years. Despite this fact, most Arab countries appear to underestimate the importance of this issue and are not anticipating the future repercussions on national economies caused by this demographic transition.

In Qatar, the number of people aged 60 years or more is expected to increase from 17,500 (3.1%) in 2000 to 172,000 (20.7 %) in 2050, a 10-fold increase [5]. Despite the support that medical and social systems provide to the elderly, many older people still experience discomfort because of loneliness, depression, social isolation, or constrained quality of life [6]. The QOL of older adults could be good, or at least preserved, provided they have autonomy, independence and good physical health and provided they fulfill social roles, remain active and enjoy a sense of personal meaning [7]. QOL as a person's sense of well-being is not homogeneous but is multidimensional, with many components that range from health indicators to individual habits, culture and ethics [8]. Personal opinions should therefore be taken into account when assessing elderly QOL [9]. Health interventions, welfare programs, health care and the well-being of the elderly can be improved and evaluated through studies of their QOL. The World Health Organization (WHO) defines QOL as an individual's perception of his/her status in life in the context of the individual's environment, belief systems, and goals [10]. Several studies have shown that younger elderly, being married or females with adequate income are likely to have better QOL in comparison to older elderly, males, divorced or widows with inadequate income [11-15]. Moreover elderly people with higher education were found to have a better QOL than those with lower education [16]. Furthermore, an active lifestyle preserves physical function in older adults which may possibly contribute to higher levels of QOL scores in domains related to physical health [17].

Evaluating elderly QOL should be done from a different perspective to QOL assessments for the general population [18]. In spite of this, there is still a lack of studies directed towards aging in general and elderly QOL in particular, for the population of Qatar. This study assesses QOL and its different domains among a group of elderly Qataris visiting primary health care (PHC) centers in Qatar and seeks to identify determinants of QOL.

Methodology

Study design: A cross-sectional study

Setting: The study was conducted in 14 health centers out of 21 PHC centers distributed throughout Qatar.

Sample Size & Technique: Subjects included male and female elderly Qataris aged 60 years or more who visited the PHC centers during the 3 month's field work duration from March 15 to June 15, 2015. Consent was gained to participate in the study. Convenience cluster sampling technique with proportional allocation was used. The estimated sample size was 672 elderly individuals based on prevalence of bad QOL = 24% (from pilot study results), 95 confidence interval, precision = 5%, design effect = 2, and inflation rate = 20%. Data collection in each center was carried out on a daily basis until the required quota from each center was reached.

Inclusion criteria: All Qatari elderly aged 60 years or more, males and females who visited the health centers during the study field work, were invited to participate.

Exclusion criteria: Individuals below 60 years of age or with communication problems or with a score < 7 as screened by the Short Portable Mental Status Questionnaire (SPMSQ), indicating severe cognitive affection, were excluded [19].

Method of data Collection tool: The study tool was an Arabic structured interview questionnaire including the following items:
(a) **Socio-demographic** data such as age, sex, income level, educational level and marital status.
(b) **Health measures** such as types of chronic diseases, hospital admissions, current medications and screening questions for depression.
(c) **Assessment of QOL** by the WHOQOL-BREF standard questionnaire (Arabic version) [20], with an add-on old module for elderly populations. The questionnaire has 26 items on a 5-point scale, ranging from totally absent/totally disagree/very bad to totally present/totally agree/excellent; it also included 2 subjective overall items allowing the subject's self-evaluation of his/her overall QOL and overall health, as well as 24 items relating to 4 domains: physical health, psychological well-being, social and environmental domains. From those questions, 2 were excluded; this included questions about working capacity, since all elderly were retired and jobless, and that relating to sexual activity, as it was totally missing in the responses. The scoring rules for the questionnaire assessment were followed according to the WHOQOL group; questions 3, 4, and 26 were reversed, as they were negative questions. The add-on old module is a short form of the original 24-question WHOQOL-OLD questionnaire [21]; it includes only 6 questions, 1 from each of the 6 facets. Each question was rated on a Likert scale ranging

from 1–5, where 1 represents never and 5 represents always. The sum of its scores ranges from 6–30, and the total number of questions was 2 (global) + 22 WHOQOL + 6 Old domain = 30 questions. The total QOL score was calculated by the sum of all the domain scores, giving a range from 30–150. In each domain and in the total QOL, higher scores indicated better QOL. The raw score for each domain and the total score were converted into percentages for international comparisons, because the add-on module prevented direct score comparison with the WHOQOL-100. The three percentiles (25th = 91, 50th = 100, 75th = 108) were used to categorize total QOL scores as poor QOL (< 91), fair (91–99), good (100–107), and very good (> 107). Each domain was analyzed separately, as was the total QOL against the independent variables.

(d) Social activities were assessing elderly weekly participation in social activities including going to pray, social gathering and playing games. The responses were coded as (1-never / 2- 1-2 times per week / 3- 3-6 times per week/ 4-daily). Also the frequency of attending other social activities such as marriage parties, funerals and ceremonies was also inquired about and the responses were coded as (1- never 2- rarely 3- sometimes 4-usually). Answers of these 5 questions were given a score (1) for never response to (4) for daily/usually response. The scores transformed into percent on the scale from 0-100% [22].

e) Functional abilities were assessed by a validated Arabic version of Katz index for activities of daily living (ADL) [23] and Lawton scale for instrumental activities of daily living (IADL) [24]. For ADL, 6 functions were enquired about: bathing, dressing, toileting, transporting, continence and feeding. Three weighted categories were used to evaluate the elderly's response: (1) totally independent, (2) partially independent (3) totally dependent. For IADL, 8 functions were enquired about: 6 common for both males and females and including : the ability of using a telephone, going out more than walking distance, shopping, managing money, preparing meals, housekeeping, laundry and taking medications without assistance. Three weighted categories were also used to evaluate the elderly's response: (1) totally independent, (2) partially independent and (3) totally dependent. A pilot study was conducted among 30 elderly Qataris in order to make adjustments before the actual study commenced.

Data analysis: The data were analyzed using Statistical Package of Social Science [SPSS] version 20. Data normality was tested using the K–S test and histograms. Descriptive analysis was calculated in the form of mean with SD for parametric quantitative variables, median and IQR for non-parametric variables, and frequency and % for qualitative data. Chi-square and Fisher's exact tests were used to examine the relationship between qualitative variables, while Student's t-test and ANOVA with post-hoc LSD were used for normally distributed quantitative variables. The Mann–Whitney U test was used for non-parametric quantitative variables. Pearson or Spearman correlations were used for bivariate correlations according to data normality. Multiple regression analysis was done.

All the predictive risk factors significantly associated with each domain of QOL were entered into the final total QOL multiple linear regression model. This model was used to identify the QOL predictors, and p < 0.05 was considered statistically significant.

Ethical Consideration: Institutional Review Board (IRB) was obtained from Hamad Medical Corporation. Informed consent was obtained from each participant. Voluntary participation and confidentiality were assured.

Results

Among the 672 elderly included in the study, 54.2% were male. There was no significant difference in the mean age between males and females. The majority of the subjects were currently married (78.9%), 71% were illiterate; most participants were retired and 99% were on a pension and 78% reported that their income was not sufficient , all participants had a history of chronic disease. About 70% of the female elderly had 3 diseases or more compared to only 60.4% among males. Hospital admissions in the year prior to the study period were reported by 11.8%, with no significant difference between males and females. It was reported that 63% of females were using 3 or more medications compared to 47% among males; this was a highly significant difference (p < 0.001). The most prevalent reported disease was diabetes mellitus (88.8%), which was more common among females (94.5%) than males (84.1%); followed by hypertension (69.3%), which was more common among males (74.5%) than females (63.3%), and then raised blood lipids (66.5%), which was more common among females (70.5%) than males (63.2%); these differences were all statistically significant (Table 1).

Table 2 shows that the mean score of social activity was equal to 38.7 ± 18.1 for the whole study participants with higher mean score % among males being 49.0 ± 15.9 while that of the females was 26.5 ± 11.9 and the difference was highly significant since p< 0.001. The total mean score % of functional abilities ADL; was 4.2 ± 12.1 while that of the IADL was 44.3 ± 17.2. The mean % score for both the ADL and IADL highly significantly differed between males and females. Males were more independent with lower mean scores % being 1.05 ± 4.95 and 34.68 ± 13.5 respectively while females were more dependent with higher mean scores % being 7.98 ± 16.27 and 55.69 ± 13.92 respectively. As shown in Table 3, the highest domain percentages were for the environmental and social domains (71% each), followed by the physical health (65%) and the psychological domain (64%). The lowest score was for the QOL-old domain sum items (47.5%). A combined 51% of the elderly enjoyed a very good or good QOL (24.9% and 26.1%, respectively), while 49% had a fair or poor QOL (24.1% and 24.9%, respectively; Figure 1).

All the domain scores were tested in a multiple regression analysis model to predict the solo contribution of each domain (Table 4). It revealed that the physical health domain had the highest significant impact on the total

QOL (36.1%), and the social domain contributed the least to total QOL (8%). The perceived overall QOL score was significantly correlated with all domain scores and with the total calculated QOL score. All the correlations were statistically significant at p < 0.001. The strongest correlation with perceived overall QOL was with the physical health domain (r = 0.72), while the weakest was with the social domain (r = 0.45).

Table 5 shows the statistically significant predictors of the total QOL score using the enter model for multiple linear regression analysis. The prediction model was statistically significant, F = 84.88, p < 0.001, and accounted for approximately 72% of the variance in the total QOL score (R2 = 0.73, adjusted R2 = 0.72). Other than the gender, educational level and income sufficiency, all the other demographic factors such as age and smoking, were found to be insignificant predictors of total elderly QOL. Gender was the main socio-demographic QOL predictor, contributing 11% of the model variance. Among health factors, the remaining significant factors in the model were the number of chronic diseases, self-reported overall health, osteoarthritis, and osteoporosis by 29.3%, 27.2%, 8.3%, and 6.8%, respectively. As a group, health factors were the strongest determinants of total QOL. Social activity is a predictor of the total QOL, IADL% was also a significant predictor in the three models. As a group, health factors were the strongest determinants of the total QOL for the three models followed by the social one.

Table 6 shows the Spearman correlations between the QOL domains and total QOL% scores with both the ADL% and the IADL% scores. It is clear from the table, the significant negative correlation between the increase in inactivity (higher scores) and the decrease in the QOL domains % scores and the total QOL% score with P<0.001. The highest negative correlation as expected was observed with the physical health domain % score (r=-0.66 with IADL and r=-0.44 with ADL). For the total QOL % score, the IADL% score was found to be more correlated negatively with it than with the ADL% score (r= -64, r= -0.44 respectively) and the same result was observed with all domains % scores. As regard the social activity and its effect on the QOL, it was found to be correlated positively with all domain % scores especially the physical health (r=0.51) and the total QOL % score (r=0.51). All the correlations were statistically significant at p < 0.001.

Table 1: Socio-demographic characteristics and self-reported medical history among the elderly Qataris attending Primary Health Care Centers in Qatar, (n = 672)

Character	Males (n = 364) N (%)	Females (n = 308) N (%)	Total (n = 672) N (%)	X²	P
1-Age Group*:					
60–64	147 (40.4)	132 (42.9)	279 (41.5)		
65–69	87 (23.9)	67 (21.8)	154 22.9)	3.36	> 0.05
70–74	112 (30.8)	83 (26.9)	195 (29.0)		
75 +	18 (4.9)	26 (8.4)	44 (6.6)		
2-Residency:					
Inside Doha (capital city)	271 (74.5)	262 (85.1)	533 (79.3)	11.46	< 0.001
Outside Doha	93 (25.5)	46 (14.9)	139 (20.7)		
3-Marital Status:					
Married & has children	316 (86.9)	210 (68.2)	526 (78.3)	41.4	< 0.001
Married only	3 (0.8)	1 (0.3)	4 (0.6)	1	
Widowed	43 (11.8)	79 (25.7)	122 (18.1)		
Divorced	2 (0.5)	18 (5.8)	20 (3.0)		
4-Educational level:					
Illiterate (can't read or write)	204 (56.0)	273 (88.6)	477 (71.0)	91.88	< 0.001
Read & write	70 (19.2)	24 (7.8)	94 (14.0)		
Completed primary	38 (10.4)	4 (1.3)	42 (6.3)		
Completed preparatory & above.	52 (14.4)	7 (2.3)	59 (8.7)		
5-Income sufficiency to elderly needs:					
More than enough	22 (6.0)	9 (2.9)	31 (4.6)		
Enough	85 (23.4)	32 (10.4)	117 (17.4.0)	25.13	< 0.001
Not Enough	257 (70.6)	267 (86.7)	524 (78.0)		
Positive history of Chronic diseases	362 (100)	308 (100)	672 (100)		
History of :					
Hypertension	271 (74.5)	195 (63.3)	466 (69.3)	9.74	< 0.01
Diabetes mellitus	306 (84.1)	291 (94.5)	597 (88.8)	19.25	< 0.001
Raised blood lipid	230 (63.2)	217 (70.5)	447 (66.5)	3.96	< 0.05
Heart diseases	79 (21.7)	51 (16.6)	130 (19.3)	2.83	> 0.05
Asthma & COPD	29 (8.0)	15 (4.9)	44 (6.5)	2.16	> 0.05
Osteoporosis	0 (0.0)	34 (11.0)	34 (5.1)	42.32	< 0.001
Thyroid affection	6 (1.6)	81 (26.3)	87 (12.9)	89.95	< 0.001
Colon affection	63 (17.3)	97 (31.5)	160 (23.8)	18.51	< 0.001
Osteoarthritis	143 (39.3)	131 (42.5)	274 (40.8)	0.73	> 0.05
Depression	8 (2.2)	25 (8.13)	33 (4.91)	0.12	> 0.05
No. of hospital admissions in previous year:					
0	311 (85.4)	282 (91.6)	593 (88.2)		
1	48 (13.2)	25 (8.1)	73 (10.9)	7.05	> 0.05
2	3 (0.8)	1 (0.3)	4 (0.6)		
3 and above	2 (0.6)	0 (0.0)	2 (0.3)		
No. of hospital admissions in previous year:					
0	311 (85.4)	282 (91.6)	593 (88.2)		
1	48 (13.2)	25 (8.1)	73 (10.9)	7.05	> 0.05
2	3 (0.8)	1 (0.3)	4 (0.6)		
3 and above	2 (0.6)	0 (0.0)	2 (0.3)		
No. of medications:					
1	63 (17.3)	25 (8.1)	88 (13.1)	36.21	< 0.001
2	130 (35.7)	89 (28.9)	219 (32.5)		
3	94 (25.8)	96 (31.2)	190 (28.3)		
4	51 (14.0)	45 (14.6)	96 (14.3)		
5 and above	26 (7.2)	53 (17.2)	79 (11.8)		

* Mean age among males = 67.61 ±5.93, among females = 67.77 ±5.5; *(Vision and hearing impairments, anemia, etc.)

Table 2: Social activity and functional abilities of the elderly attending Primary Health Care Centers in Qatar, (n = 672)

Variable	Males (n-364) Mean% ± SD	Females (n=308) Mean% ± SD	Total (n=672) Mean% ± SD	p@
Social activity *:	49.03 ± 15.91	26.51 ± 11.99	38.71 ± 18.13	<0.001
Functional abilities:				
ADL** :	1.05 ± 4.95	7.98 ± 16.27	4.23 ± 12.1	<0.001
IADL **:	34.68 ± 13.50	55.69 ± 13.92	44.31 ± 17.23	<0.001

*   The higher the mean %, the higher the Social activity
** The higher the mean %, the lower function and higher dependency
@ Using Mann Whitney U test

Table 3: Description of total QOL, its domains, perceived overall QOL, and perceived overall health among elderly visiting Primary Health Care Centers in Qatar (n = 672)

Domain (no of questions)	Min. score	Max. score	X ± SD	Mean % ± SD
Global items:				
Perceived overall QOL (1)	1	5	3.33 ± 0.9	
Perceived overall health (1)	1	5	3.96 ± 0.7	
Physical health (6) *	10 (16.7)	30 (100)	21.56 ± 4.82	65% ± 20.08
Psychological (6)	12 (25)	28 (91.7)	21.27 ± 2.91	64% ± 12.13
Social (2) **	4 (25)	10 (100)	7.71 ± 1.07	71% ± 13.46
Environmental (8)	22 (43.8)	37 (90.6)	30.6 ± 3.54	71% ± 11.06
QOL-Old domain (6)	9 (12.5)	24 (75)	17.4 ± 3.28	47.5% ± 13.67
Total QOL (28)	61 (29.5)	124 (85.7)	98.55 ± 13.52	63% ± 12.07

* Work capacity question is not included
** Sexual activity question is not included

Table 4: Linear regression analysis for predicting the total QOL score using its domains' scores as independent variables for the elderly visiting Primary Health Care Centers in Qatar (n = 672)

	B**	Standardized Beta coefficient	p
Physical	1	0.361	< 0.001
QOL-Old domain	1	0.262	< 0.001
Environmental	1	0.243	< 0.001
Psychological	1	0.213	< 0.001
Social	1	0.08	< 0.001
Constant		−8.779E14	

Dependent variable: total QOL R=1   R2=1 Adjusted R2=1 ** 100% perfect fit model

Table 5: Statistically significant predictors of total QOL score by gender using the enter model of multiple linear regression analysis among the elderly visiting Primary Health Care Centers in Qatar

Predictors	Total QOL model (n=632)#		QOL-Male model (n=337)#		QOL-Female model (n= 295)#	
	B	Standardized Beta coefficient	B	Standardized Beta coefficient	B	Standardized Beta Coefficient
Socio-demographic						
- Gender	-2.42	**-0.11****	-	-	-	-
- Educational Level	0.57	0.066*	-	-	1.46	0.089*
- Income sufficiency	1.25	0.057*	2.24	0.097*	-	-
Social activity						
- Social activity%	0.06	0.099**	0.07	0.099*	0.09	0.091*
Health related :						
- Osteoporosis	3.29	0.068*	-	-	3.02	0.075*
- Osteoarthritis	2.03	0.083**	3.20	0.148**	-	-
- No. of chronic diseases	-2.19	-0.293***	-1.08	-0.157***	-2.69	-0.322***
- Depression	-	-	-	-	8.18	0.083*
- Perceived overall Health	4.68	0.272***	5.17	0.317***	4.27	0.281***
Functional abilities:						
-IADL%	-0.18	- 0.24***	-0.20	-0.204***	-0.14	-0.175**
Constant	44.7		49.59		39.03	
F of the model	84.88***		39.09***		32.60***	
R	0.86		0.80		0.82	
R²	0.73		0.71		0.72	
Adjusted R²	0.72		0.69		0.70	

* P<0.05   **P<0.01   ***P<0.001
40 cases were excluded as outliers; 27 males and 13 females

Table 6: Spearman correlation between Social activities score %, ADL score %, ADL score % and QOL domains among elderly attending Primary Health Care Centers in Qatar, (n = 672)

	IADL % "r"	ADL % "r"	Social activity % "r"
Physical	-0.66	-0.44	0.51
Psychological	-0.45	-0.32	0.31
Social	-0.44	-0.24	0.46
Environmental	-0.51	-0.36	0.40
Old	-0.59	-0.41	0.47
Total	-0.64	-0.44	0.51

*All correlations are statistically significant at $p < 0.001$
NB: there is a significant positive correlation between IADL % score and ADL % score ; $r= 0.65$ & $p<0.001$

Figure 1: Distribution of participants according to QOL grades by sex (n = 672)
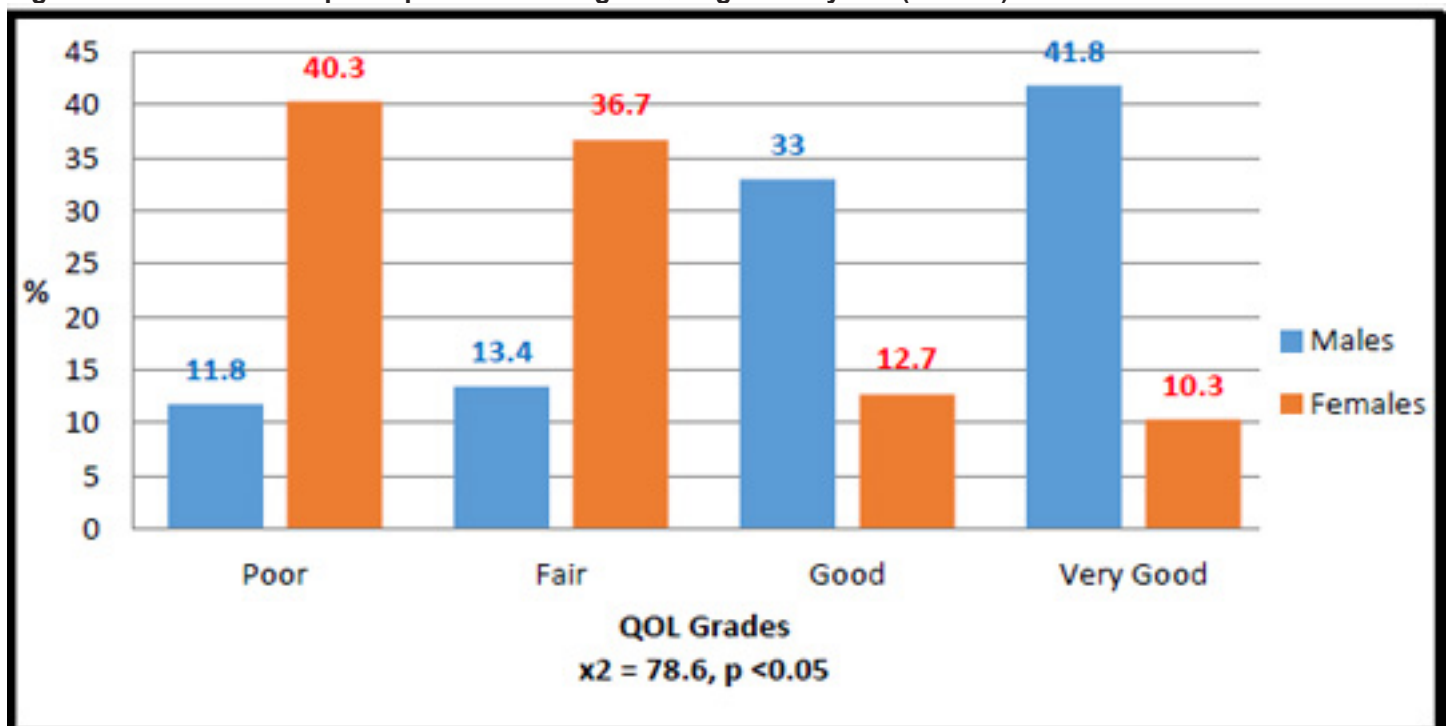
Discussion

International interest in measurement and enhancement of QOL for the elderly is growing due to higher expectations of a "good life" within societies experiencing increasing numbers of older people [9]. There is no data about this important aspect in Qatar, as this is the first study in Qatar to assess quality of life and its determinants among elderly Qataris, aiming to provide evidence for establishing effective policies and tailored interventions to improve elderly QOL in Qatar. The study aims to fill the huge gap in the scientific literature and database about elderly Qatari's characteristics; including their QOL and their health status. Results from the current study will help in developing the seed for geriatric care and research. The present study reveals that more than half of the elderly (51%) had good or excellent QOL. This is similar to that found in India [25], where 46.2% of the elderly had good or very good QOL. Another study done in Myanmar in 2010 [17] showed that

most elderly people (80.9%) had a moderate QOL, 17.2% had a high QOL and only 1.9% showed a low QOL. Much higher QOL was found in a rural area in northern India [26], where most elderly individuals (85%) enjoyed excellent or good QOL, with only 15% having a fair or poor QOL.

The present study shows that the younger age group (60–69) had significantly higher scores for total QOL and all the domains compared to older groups; this is supported by results of other studies [25 , 27]. The present study also found gender to be an important determinant of total QOL, although around three quarters of males had a good or excellent QOL, the same percentage of females had a fair or poor QOL. Moreover, females had significantly lower scores than males for total QOL and all its domains, which is supported by the findings of previous studies [28]. The present study also reveals that the married elderly were found to have significantly higher scores for QOL and all its domains, as shown in a previous study [29]. However, marital status was not found to be a significant predictor

of total QOL. The subjects of the present study had high levels of illiteracy and low educational attainment, and this was especially true of the female subjects. Subjects with higher educational attainment had significantly higher scores in total QOL and all its domains, a finding supported by prior studies [30&31]. Literate individuals often have a better understanding of their ageing process and are better able to adjust to lifestyle changes. Also, they usually have greater opportunities for career attainment, higher economic resources, more health-seeking behavior and better control of their life, all of which may have a positive impact on their QOL [32, 33]. Economic status was one of the most consistent factors associated with elderly QOL [33]. Most of the elderly in the present study reported that they have insufficient income to meet their needs. The present study reveals that income sufficiency was a significant predictor for the total QOL among males. All participants of the present study had a history of chronic disease; about 70.2 % of the female elderly had 3 diseases and more, compared to only 60.4% among males. The number of chronic diseases was an independent predictor for total QOL in this and prior studies [34&35]. In addition to showing that the number of chronic diseases has a significant negative impact on elderly QOL, the present study also found that only two diseases were independent predictors for total QOL: osteoporosis and osteoarthritis. Although the present study found that the most prevalent reported diseases among the elderly were diabetes mellitus and hypertension and that patients with these diseases had significantly lower scores for total QOL in all of the domains, neither of these 2 diseases was found to be an independent predictor of total QOL. This could be explained by psychological adaptations to chronic diseases with longer duration [36&37], although absence of chronic pain or marked psychological disturbance could be another explanation. The present study reveals that elderly subjects with osteoporosis had significantly lower scores for QOL and in all of the domains. Osteoarticular disease was the principal cause of chronic pain for 63.4% of the elderly in Portugal [38] and 40% of those 75 years or older in Sweden, where low QOL was found among the elderly with chronic pain in several dimensions, including general health perception, bodily pain, vitality, emotional functioning, physical functioning and physical activity [39].

The present study also demonstrated that one of the consistent independent predictors of the total QOL and all of its domains is the functional abilities in the form of IADL (and ADL in social domain only). The ability to carry out daily activities without limitation or dependence on others has been found to be a powerful determinant of self-perceived health and QOL in a previous study [40]; the same was observed from another study which showed that QOL was affected by daily activities, mobility and overall health [41].

Strengths of this study are that it included a large number of Qatari elderly attending different primary health care centers. Also it is the first time to assess health profile, functional abilities and QOL of a huge number of Qatari elderly using validated tools. However one of the limitations of this study is that, as a cross sectional study, it can't determine risk factors affecting QOL; instead it can identify factors associated with QOL.

Conclusion and Recommendations

QOL among the sampled Qatari elderly was average, with the physical health and social domains being the biggest contributors. Gender, income sufficiency and educational level were the most consistent correlates of QOL. Strategies for prevention and control of chronic diseases specific to the elderly could improve QOL among the elderly population. Health professionals should pay attention to elderly individuals, assessing their QOL, health education and maintaining healthy lifestyle especially physical activity and social integration, which will assure better QOL in old age. Further, research through national surveys on a large scale and on a community basis to include different categories of elderly population as healthy elderly, home-bound, institutionalized and long term care elderly for assessment of elderly QOL, their functional abilities, physical activity and social support are recommended.

Strengths and limitations of this study
• To the best of our knowledge, however, the study was the first in Qatar to measure QOL among the elderly and QOL association with different risk factors.
• This study was conducted with a relatively reasonable sample size and can be used as a platform for future studies,
• Selection bias could be expected, as selection of elderly was based solely on those visiting the PHC centers.
• Recall bias may also be expected due to self-reporting of disease, medications, and hospital admission, especially as the elderly undergo memory changes that can decrease memory accuracy.
• A cross sectional study cannot determine risk factors affecting QOL; instead it can identify factors associated with QOL.
• Taking into consideration the above-mentioned limitations this may make it difficult to generalize the results to all Qatari elderly in the community.

List of abbreviation
ADL: Activities of Daily Living
COPD: Chronic Obstructive Pulmonary Disease
DALYs: Disability Adjusted Life Years
GNP: Gross National Product
HRQOL: Health-Related Quality of Life
IADL: Instrumental Activities of Daily Living
PHCC: Primary Health Care Centers
QOL: Quality of Life
SPMSQ: Short Portable Mental Status Questionnaire
SPSS: Statistical Package for Social Sciences
WHO: World Health Organization
WHOQOL: World Health Organization Quality Of Life

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Safety of hydroxyurea in sickle cell diseases

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Abstract

Background: We tried to understand safety of hydroxyurea in sickle cell diseases (SCDs).

Methods: The study was performed between March 2007 and September 2013.

Results: The study included 337 patients (169 females). Mean number of painful crises per year was decreased with hydroxyurea (10.3 versus 1.7 crises per year, p<0.000). Mean severity of painful crises was decreased, too (7.8/10 versus 2.2/10, p<0.001). Although body weight, hematocrit (Hct) value, and mean corpuscular volume (MCV) increased, white blood cell (WBC) and platelet (PLT) counts and direct bilirubin, total bilirubin, and lactate dehydrogenase (LDH) values of serum decreased (p<0.000 for all). We detected hepatotoxicity in 13 acute painful crises (two females and 11 males) among 1,211 episodes, totally (1.0%). So it was significantly higher in males (6.5% versus 1.1%, p<0.001). All of them healed completely with withdrawal of all of the medications but not hydroxyurea alone. The solitary adverse effect of hydroxyurea was bone marrow suppression with prominent anemia in higher dosages. It was detected in seven females (4.1%) and nine males (5.3%, p>0.05), and they completely healed with transient withdrawal and decreased dosages thereafter.

Conclusion: Hydroxyurea decreases frequency and severity of painful crises, WBC and PLT counts, direct and total bilirubin, and LDH values of serum, whereas it increases body weight, Hct value, and MCV. The rare (1.0%) and reversible hepatotoxicity during acute painful crises may not be related to hydroxyurea alone, and the bone marrow suppression with prominent anemia in higher dosages may be the solitary adverse effect of the drug.

Key words: Hydroxyurea, sickle cell diseases, chronic endothelial damage, atherosclerosis, metabolic syndrome

Introduction

Aging may be the major physical health problem of the human being, and systemic atherosclerosis may be the major underlying cause of it. Atherosclerosis is an irreversible process mainly keeping afferent vasculature due to the much higher blood pressure (BP) in them. Accelerating factors of atherosclerosis are collected under the heading of metabolic syndrome including physical inactivity, smoking, alcohol, chronic inflammation and infections, cancers, excess weight, dyslipidemia, elevated BP, and insulin resistance for the development of irreversible diseases including obesity, hypertension (HT), diabetes mellitus (DM), coronary heart disease (CHD), chronic obstructive pulmonary disease (COPD), cirrhosis, chronic renal disease (CRD), peripheric artery disease, and stroke (1-6). Early aging and premature death are the terminal consequences of the syndrome. Similarly, sickle cell diseases (SCDs) are systemic angiopathic processes that are characterized by sickle-shaped red blood cells (RBCs) caused by homozygous inheritance of the hemoglobin S (Hb S) (7, 8). Glutamic acid is replaced with a less polar amino acid, valine, in the sixth position of the beta chain of the Hb S. Presence of valine promotes polymerisation of the Hb S. So Hb S causes RBCs to change their normal elastic and biconcave disc shaped structures to hard bodies. The decreased elasticity of RBCs instead of shapes may be the chief pathology of the diseases. The sickling process is probably present in the whole life span but exaggerated with several stresses. RBCs can take their normal elastic shapes after normalization of stresses of body, but after repeated cycles of sickling and unsickling, they become hard bodies, permanently. The hard cells induced chronic endothelial damage together with tissue ischemia and infarctions are the final consequences of the diseases, so life expectancy of such patients is decreased by 25 to 30 years (9). We tried to understand the long-term safety of hydroxyurea therapy in patients with the SCDs.

Material and Methods

The study was performed in the Medical Faculty of the Mustafa Kemal University between March 2007 and September 2013. All patients with SCDs were enrolled into the study. SCDs are diagnosed by the hemoglobin electrophoresis performed via high performance liquid chromatography. Their medical histories including smoking habit, regular alcohol consumption, and leg ulcers were learnt. Frequency of painful crises was detected as a mean number of crises per year, and severity of them as a mean degree between 0 to 10 according to patient's self-explanation. Cases with a history of three pack-year were accepted as smokers, and cases with a history of one drink a day for three years were accepted as drinkers. A check up procedure including body weight, serum creatinine value, hepatic function tests, markers of hepatitis viruses A, B, and C and human immunodeficiency virus, an electrocardiography, a Doppler echocardiography, an abdominal ultrasonography, a computed tomography of brain, and a magnetic resonance imaging of hips was performed. Other bone areas for avascular necrosis were scanned according to the patients' complaints. Cases with acute painful crisis or any other inflammatory event were treated at first, and then the spirometric pulmonary function tests to diagnose COPD, the Doppler echocardiography to measure the systolic BP of pulmonary artery, and renal and hepatic function tests were performed on the silent phase. The criterion for diagnosis of COPD is post-bronchodilator forced expiratory volume in 1 second/forced vital capacity of less than 70% (10). Systolic BP of the pulmonary artery of 40 mmHg or higher during the silent phase is accepted as pulmonary hypertension (11). CRD is diagnosed with a persistent serum creatinine level of 1.3 mg/dL or higher in males and 1.2 mg/dL or higher in females on the silent phase. Cirrhosis is diagnosed with physical examination findings, laboratory parameters, ultrasonographic evaluation, and liver biopsy in case of requirement. Digital clubbing is diagnosed with the ratio of distal phalangeal diameter to interphalangeal diameter of greater than 1.0 and with the presence of Schamroth's sign (12, 13). A stress electrocardiography was performed in cases with an abnormal electrocardiography and/or angina pectoris. A coronary angiography was obtained just for the stress electrocardiography positive cases. So CHD was diagnosed either angiographically or with the Doppler echocardiographic findings as the movement disorders of the cardiac walls. Then, a hydroxyurea therapy was initiated to all patients with an initial dose of 15 mg/kg/day, and then the dose was increased up to the final dose of 35 mg/kg/day according to patients' requirements and compliance. Finally, any adverse effect of the therapy was followed up, and the mean number and severity of painful crises, mean body weight, white blood cell (WBC) and platelet (PLT) counts, hematocrit (Hct) value, mean corpuscular volume (MCV), and the direct bilirubin, total bilirubin, and lactate dehydrogenase (LDH) values of serum were compared before and after the hydroxyurea therapy. Mann-Whitney U test, Independent-Samples t test, and comparison of proportions were used as the methods of statistical analyses.

Results

The study included 337 patients with the SCDs (169 females and 168 males). The mean ages of them were 28.4 ± 9.3 (8-59) versus 29.8 ± 9.3 (6-58) years in females and males, respectively (p>0.05). The final dose of 35 mg/kg/day with hydroxyurea therapy was just achieved in 25 cases (7.4%), and the usual dose was 500 mg twice daily during the 7-year follow-up period. During the period, the mean number of painful crises per year was decreased with the treatment, significantly (10.3 versus 1.7 crises per year, p<0.000). The mean severity of painful crises was decreased, too (7.8/10 versus 2.2/10, p<0.001). Although the mean body weight, mean Hct value, and MCV increased, the WBC and PLT counts and the direct bilirubin, total bilirubin, and LDH values of serum decreased with the therapy, significantly (p<0.000 for all) (Table 1). During the 7-year follow-up period, we detected hepatotoxicity just in 13 acute painful crises among 1.211 episodes, totally (1.0%). Interestingly, two of the patients were female with

Table 1: Characteristic features of sickle cell patients before and after hydroxyurea therapy

Variables	Before hydroxyurea therapy	p-value	After hydroxyurea therapy
Mean number of painful crises per year	10.3 ± 10.6 (0-48)	≤0.000	1.7 ± 1.1 (0-6)
Mean severity of painful crises	7.8 ± 2.2 (0-10)	≤0.000	2.2 ± 1.7 (0-10)
Body weight (kg)	59.1 ± 11.4 (37-95)	≤0.000	65.2 ± 13.0 (46-107)
White blood cell (µL)	15.050 ± 6.148 (4.890-38.800)	≤0.000	11.349 ± 5.029 (5.010-31.850)
Hematocrit value (%)	23.2 ± 4.0 (16-35)	≤0.000	27.8 ± 3.4 (20-36)
Mean corpuscular volume (fL)	88.7 ± 9.6 (57-112)	≤0.000	105.2 ± 13.6 (66-129)
Platelet (µL)	449.840 ± 217.370 (169.000-1.561.000)	≤0.000	430.840 ± 142.681 (219.000-936.000)
Total bilirubin (mg/dL)	5.3 ± 5.6 (0.6-38.2)	≤0.000	3.1 ± 2.2 (0.7-11.0)
Direct bilirubin (mg/dL)	2.0 ± 3.4 (0.2-15.0)	≤0.000	0.9 ± 0.9 (0.2-6.0)
Lactate dehydrogenase (IU/L)	647.5 ± 265.8 (196-1.552)	≤0.000	509.9 ± 315.4 (235-2.218)

Table 2: Sickle cell patients with associated disorders

Variables	Prevalence
Autosplenectomy	46.8%
Avascular necrosis of bones	18.9%
Leg ulcers	12.7%
Pulmonary hypertension	11.5%
Chronic renal disease	8.3%
Coronary heart disease	7.7%
Digital clubbing	6.5%
Stroke	6.5%
Exitus	5.3%
Chronic obstructive pulmonary disease	4.7%
Cirrhosis	3.2%

a mean age of 38.5 years and 11 cases were male with a mean age of 32.3 years. So the hepatotoxicity during acute painful crises was significantly higher in males (6.5% versus 1.1%, p<0.001). All of the cases healed completely with withdrawal of all of the medications but not hydroxyurea alone. The solitary adverse effect of hydroxyurea therapy was bone marrow suppression with prominent anemia in higher dosages during the 7-year follow-up period. It was seen in seven females (4.1%) with a mean age of 36.5 years and nine males with a mean age of 28.0 years (5.3%, p>0.05), and they completely healed with transient withdrawal and decreased dosages of hydroxyurea thereafter. Just in one male patient with an age of 22 years, we needed to support with two units of RBCs suspensions due to the symptomatic palpitation. None of the patients needed any supportive therapy for thrombocytopenia or leukopenia. Although the presence of prominent anemia, none of the patients was on acute painful crisis during the detection. On the other hand, we detected autosplenectomy in 46.8%, avascular necrosis of bones in 18.9% (90.6% at the hip joints), leg ulcers in 12.7%, pulmonary hypertension in 11.5%, CRD in 8.3%, CHD in 7.7%, digital clubbing in 6.5%, stroke in 6.5%, exitus in 5.3%, COPD in 4.7%, and cirrhosis in 3.2% of the patients (Table 2). Although smoking was observed in 6.5% (22) of the patients, there was only one case (0.2%) of regular alcohol consumption, who was not cirrhotic at the moment. Although antiHCV was positive in two of the cirrhotics, HCV RNA was detected as negative by polymerase chain reaction in both. Prevalence of mortality was similar in both genders (4.7% versus 5.9% in females and males, respectively, p>0.05), and mean ages of such cases were 32.1 versus 29.1 years in females and males, respectively (p>0.05).

Discussion

SCDs particularly affect microvascular endothelial systems of the body (14, 15), since the capillaries are the main distributors of the hard bodies into the tissues. Because of the microvascular nature of the diseases, we can observe healing of leg ulcers with hydroxyurea therapy in early years of life, but later in life the healing process is difficult due to the excessive fibrosis around the capillaries. Eventually, the mean survival rates were around 42 years in males and 48 years in females in the literature (9), whereas they were 29.1 and 32.1 years, respectively, in the present study (p>0.05). The great differences between the survival rates may be secondary to the delayed initiation of hydroxyurea therapy in the SCDs in Antakya region of Turkey. On the other hand, the relatively longer survival of females with the SCDs should also be researched, effectively. As a result of such a great variety of clinical presentation, it is not surprising to see that the mean body weight and body mass index (BMI) were significantly retarded in the SCDs patients (16). Probably parallel to the lower mean body weight and BMI, mean values of the low density lipoprotein cholesterol, alanine aminotransferase, and systolic and diastolic BPs were also lower in the SCDs (16), which can be explained by definition of the metabolic syndrome (17, 18).

Painful crises are the most disabling signs of the SCDs, and infections, inflammation, operations, depression, and other stressful conditions of the body may trigger them. Although some authors reported that the painful crises themselves may not be life threatening (19), increased metabolic rate during the painful crises may terminate with an increased risk of mortality mainly due to end-organ insufficiency. Probably pain is the result of a generalized inflammatory process on the vascular endothelium, and the increased WBC and PLT counts and the decreased Hct values show presence of a chronic inflammation during their whole lives in such patients (20). For example, leukocytosis even in the absence of an infection was an independent predictor of the severity (21), and it was associated with an increased risk of stroke probably by releasing cytotoxic enzymes and causing endothelial damage in another study (22). Due to the severity of pain, narcotic analgesics are usually required to control them (23), but according to our experience, simple and repeated RBC transfusions are highly effective during the severe crises both to relieve pain and to prevent sudden deaths which may develop secondary to the end-organ insufficiency on chronic inflammatory background of the SCDs (24).

Hydroxyurea is an effective therapeutic option for the treatment of chronic myeloproliferative disorders and SCDs. It interferes with cell division by blocking the formation of deoxyribonucleotides by means of inhibition of ribonucleotide reductase. The deoxyribonucleotides are the building blocks of DNA. Hydroxyurea mainly affects hyperproliferating cells. Although the action of hydroxyurea is thought to be the increase in gamma-globin synthesis for fetal hemoglobin (Hb F) (25, 26), its main action may be the suppression of leukocytosis and thrombocytosis via blocking the DNA synthesis in the SCDs. In this way, the chronic inflammatory process of the SCDs that initiated at birth on the vascular endothelium is suppressed to some extent. Due to the same action, hydroxyurea is also used in moderate and severe psoriasis to suppress hyperproliferating skin cells. As in viral hepatitis cases, although presence of continuous damage of sickle cells on the capillary endothelium, the severity of destructive process is probably exaggerated by the patients' own immune systems, particularly by the actions of WBCs and PLTs. So suppression of excessive proliferation of WBCs and PLTs probably limits the endothelial damage-induced tissue ischemia and infarctions all over the body. Similarly, it was reported that the lower neutrophil counts were associated with lower crisis rates, and if a tissue infarction occurs, lower neutrophil counts may limit severity of pain and extent of tissue damage (27). On the other hand, final Hb F levels in hydroxyurea users did not differ from their pretreatment levels, significantly (27).

Physicians at the National Institutes of Health Consensus Conference agreed that hydroxyurea is underused both in children and adults due to some reasons. Hydroxyurea is a chemotherapeutic agent, thus it is not used by women planning to become pregnant in the near future. Additionally, there is a fear of potentially increased risk of cancers

increased risk of cancers in people (28). However, the cancer risk has not been substantiated by more than a decade of using hydroxyurea for adults (29). Although investigational and post-marketing data show risk to fetus (30), potential benefits may outweigh potential risks in pregnancy. According to our experiences, there are several SCDs' patients with infertility, abortus, stillbirth, erectile dysfunction, loss of libido, delayed menarche, and early menopause. Sickle cell anemia itself, chronic disease anemia, vitamin B12 and/or folic acid deficiencies, chronic vascular endothelial inflammation all over the body, end-organ insufficiencies, painful crises, frequent hospitalizations, invasive procedures, repeated blood transfusions, medications, cachexia, relative immune suppression, frequent infections, and depression may be found among several underlying causes of them in the SCDs' patients. The decreased number and severity of painful crises, increased mean body weight, decreased WBC and PLT counts, and increased Hct value with hydroxyurea therapy will probably result with resolution of most of the above problems to some extent. It is clear that there is a need for more effective treatment regimens in the SCDs, but until they become available, hydroxyurea must be used in all cases, and its dosage has to be increased as much as possible until the normalization of all symptoms, signs, and laboratory abnormalities.

Hydroxyurea probably has a life-saving role in the SCDs. The Multicenter Study of Hydroxyurea (MSH) studied 299 severely affected adults with sickle cell anemia (Hb SS), and compared the results of patients treated with hydroxyurea or placebo (31). The study particularly researched effects of hydroxyurea on painful crises, acute chest syndrome, and requirement of blood transfusion. The outcomes were so overwhelming in the favour of hydroxyurea that the study was terminated after 22 months, and hydroxyurea was initiated for all patients. The MSH also demonstrated that patients treated with hydroxyurea had a 44% decrease in hospitalizations (31). In multivariable analyses, there was a strong and independent association of lower neutrophil counts with the lower crisis rates (31). But this study was performed just in severe Hb SS cases alone, and the rate of painful crises was decreased from 4.5 to 2.5 per year (31). Whereas in our study, we used all subtypes of the SCDs with all clinical severity, and the rate of painful crises was decreased from 10.3 to 1.7 per year (p<0.000) with an additional decreased severity of them (7.8/10 versus 2.2/10, p<0.000). Parallel to our results, adult patients using hydroxyurea for frequent painful crises appear to have reduced mortality rate after a 9-year follow-up period (32). The underlying disease severity remains critical to determine prognosis, but hydroxyurea may decrease severity of disease and prolong survival (32). Probably the chronic endothelial damage of the SCDs is initiated at birth, and complications may start to be seen even in infancy. For example, infants with lower hemoglobin levels were more likely to have a higher incidence of clinical events such as acute chest syndrome, painful crises, and lower neuropsychological scores, and hydroxyurea reduced the incidence of them (33). Hydroxyurea therapy in early years of life may also protect splenic function,

improve growth, and prevent end-organ insufficiency by decreasing early capillary endothelial damage. Transfusion programmes can also reduce all of the complications of the SCDs, however transfusions carry many potential risks including infection transmission, development of allo-antibodies making subsequent transfusions difficult, and iron overload.

As a conclusion, hydroxyurea decreases frequency and severity of painful crises, WBC and PLT counts, direct and total bilirubin, and LDH values of serum, whereas it increases mean body weight, Hct value, and MCV. The rare (1.0%) and reversible hepatotoxicity during acute painful crises may not be related with hydroxyurea alone, and the bone marrow suppression with prominent anemia in higher dosages may be the solitary adverse effect of the drug.

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The Effectiveness of ACT Treatment in Reducing the Symptoms of Depression in Patients with Epilepsy

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Abstract

The aim of this research was to determine the effect of Acceptance and Commitment Therapy (ACT) on reducing depression symptoms in people with epilepsy. This research was semi-experimental and it contained a pre-test-post-test and a control group at convenience which was based on the results of Beck Depression Inventory (BDI) . To investigate the research, 30 patients with epilepsy and depression symptoms were selected from among the people having epilepsy and referring to the Epilepsy Association in Tehran (2013). They were randomly divided into two groups of experimental (15 persons) and control (15 persons). Acceptance and Commitment Therapy was done in 8 sessions of 60-90 minutes in the experimental group and the control group did not receive any interventions. Pre-test and post-test scores were analyzed by one-way covariance (ANCOVA) for both groups. The results of this research showed that the difference between the experimental and control groups in the depression variable was significant with the confidence interval of F = 87.433. Moreover, the anxiety scores of the experimental group were significantly decreased (P = 0.000) compared to the control group. This suggests that Acceptance and Commitment Therapy (ACT) is effective in reducing the symptoms of depression in people with epilepsy.

Key words: Epilepsy, Depression Symptoms, Anxiety, Acceptance and Commitment Therapy

Introduction

Epilepsy is not a mental disorder. People of all ages can be affected by epilepsy; it is a brain chronic disorder (Khalil, et al. 2018). It is a neurological disorder that has not yet been cured (Crotzer, translated by Soltani translation, 2009). Therefore, epilepsy is a brain disorder that occurs with frequent seizures caused by electrical disorders in the brain's neurons; a physiological disorder of the cerebral cortex. In this kind of disorder, the electrical drainage is abnormal and simultaneously the brain cells are temporarily and transiently created. Epilepsy is the most common chronic neurological disease in the world and affects around 45 million people worldwide (Bahrpeyma, 2009). The causes of epilepsy include: problems with the completion of the prenatal brain, lack of oxygen at or after birth, severe brain injury, unusual brain shape, tumour, subsequent effects of brain infection such as meningitis or brain tumors and genetic factors (Crotzer, 2004). Epilepsy is associated with a range of biological aspects and psychopathology, among which depression disorder is the most common psychiatric disorder (Zahiruddin and Qureyshi, 2006).

Mood disorders encompass a large group of psychiatric disorders (Vidya, et al., 2015). Among the most prevalent psychiatric turmoils and problems of human life, is depression (Osman & Bahri, 2019). Depression is known as a single disorder (excitement and temper), though, there are practically four sets of signs and symptoms (Rita et al., 2007). Depression disorder as temper disorder is one of the most common psychiatric diseases. It is a mental disorder that commonly presents with depressed mood, decreased energy, emotions of guilt or low self-confidence, loss of interest or pleasure, poor concentration, and disturbed sleep or appetite (AL-Asiri & Alotaibi, 2018). Its prevalence is about 15% for whole life. For women, there may be up to 25%. The incidence of depression among the patients of general practitioners is about 10% and among the hospitalized patients it amounts to 15% (Saduk and Saduk, 2007, quoted by Razaei, 2005). Anxiety is another disorder which is an unpleasant emotion that we all have experienced to some extent in form of words such as worry, anxiety, tension and fear (Sanei & Nabavi Chasmi, 2018).

Acceptance and commitment therapy (ACT) therapy creates therapeutic changes through "creation and development of mental admission and increasing the practice of values" in patients. The obvious advantage of this psychotherapy is to give the individual a kind of opportunity to learn new and specific skills, such as increased psychological admission and contact with the present, and this also makes it difficult for the individual not only to avoid it, but to face it flexibly (Mohammadi, et al., 2018). Acceptance and Commitment Therapy (ACT) is a behavioral therapy that uses mindfulness, acceptance, and cognitive dissociation to enhance psychological flexibility (Herbert, Forman, 2011, quoted by Izadi and Abedi, 2013). In acceptance and commitment therapy, the psychological flexibility is to increase the ability of clients to communicate with their experiences in the present; so they act based on what is possible at that moment for them, and in a manner that their action is consistent with their chosen values (Hayes et al., 2010, quoted by Izadi, Abedi, 2013). The goal of intervention of acceptance and commitment therapy is to change the processes that contribute to the psychopathology of these disorders. In fact, this kind of treatment empowers the individuals to change the hard thoughts and feelings and the ways to cope with problems through the specific techniques. ACT is a contextual approach that challenges the clients to accept their thoughts and feelings and commit themselves to the necessary changes. The core of the change in ACT is the change in internal and external verbal behavior. ACT believes that engaging with emotions will make them feel worse (Brykan, 2006).

In 2013, Narimani et al. conducted research comparing the effectiveness of Acceptance and Commitment Education (ACT) with training excitement regulation in the adaptation of students with math disorders. The results showed the effectiveness of Acceptance and Commitment Training (ACT) with emotional regulations in improving social, emotional and educational adaptations of students with maths disorders. Gharayi Ardakani et al. (2012) conducted research on the effectiveness of the Acceptance and Commitment approach in reducing pain intensity in women with chronic headache disorder. The results of this research indicated that ACT was effective in reducing pain experience in women with chronic headaches. In the research of Salehzadeh et al. (2011), on the effect of cognitive-behavioral therapy on the ineffective attitudes in patients with epilepsy, the effectiveness of this treatment was confirmed. Research was conducted by Salehzadeh et al. (2010), on the effect of cognitive-behavioral group therapy on depression in patients with epilepsy resistant to drugs. The findings of their study confirmed the efficacy of this type of treatment. Other research by Hashemi (2010) on the effectiveness of cognitive-behavioral intervention in reducing the level of depression, anxiety and stress in patients with epilepsy the effectiveness of the above components was shown. Najafi et al. (2010) conducted a study investigating the pattern of personality characteristics and psychopathology of patients with complex and grand mal epilepsy and comparing it with the control group. They concluded that the psychological interventions in the treatment of this disease were necessary and useful.

Pereira and De Valent, (2013), studied the severity of symptoms of depression and performance dysfunction in children and adolescents with epilepsy. The results indicated that children with epilepsy at the early stages of their disease faced a general, moderate to severe performance disorder, and this situation also occurred in adolescents which could lead to depression. Gaudiano et al. (2013) treated 14 people with depression and concluded that not only was this therapy useful for the treatment of people with major depression but it also increased their psychosocial performance. Moto (2012) conducted research for measuring the effectiveness of acceptance and commitment therapy for the treatment of people with chronic depression in an individual 58 years old; in a follow-up period of 5 months, he concluded that this therapy for the treatment of chronic depression was recommendable.

Because acceptance and commitment therapy is a part of the third wave treatments of behavioral therapy, and given that new therapies cover the weaknesses of previous treatments, this therapy can reduce the symptoms of depression in people with Epilepsy. Since the acceptance and commitment therapy try is almost unknown in our country, its introduction would be very helpful. Therefore, considering the success of the acceptance and commitment therapy in recent years, the effectiveness of ACT in reducing the symptoms of depression in patients with epilepsy has been addressed in the present study.

Research Method

This research was semi-experimental with pre test, post test design and using a control group. The statistical population of this research included all people having Epilepsy with the symptoms of depression who had referred to Iranian Epilepsy Society in 2013. Sampling method in this research was convenience with the randomization of the control and experimental groups. The sample size was estimated to be 15 individuals, based on a Cohen table with the effect size of 0.5 and test power of 0.75 for each group. The treatment protocol has been presented in the table below.

In this research, the BDI-II Beck Depression Inventory (BDI-II), a self-report questionnaire of 21 items, was used. It was applied for measuring the severity of depression and determining the symptoms of depression in the population of psychiatric patients and to determine depression in the normal population. The scores of this questionnaire were based on four options (0-3) for the absence of a specific symptom to the highest degree of its existence in the range of 0 to 3. The psychometric studies performed on this questionnaire indicated that it enjoyed a good validity. Beck, Stear and Brown (2000) reported the internal consistency of the instrument as 73% to 92% with an average of 86%, and the alpha coefficient for the patient group was 86% and for the non-patient was 81%. The alpha coefficient of this questionnaire was 0.92 for ambulatory patients and 0.93 for students. In a meta-analysis that was performed on 9 psychiatric samples, this questionnaire showed more internal consistency than the first version of the questionnaire. The test-retest reliability coefficient in a subgroup of outpatients was 0.93 for a week (Beck, Stear and Brown, 1996, quoted by Zemestani Bamchi, 2008). Fati (2003) performed this questionnaire on an Iranian sample of 94 people, and reported an alpha coefficient of 0.91, a coefficient of correlation of 0.89 and a retest coefficient of one-week interval of 0.94. Ghasemzadeh et

Table of Treatment protocol

Sessions of treatment	Objectives
Session 1	Introducing treatment Discussion on the limits of confidentiality Client's informed consent to complete the treatment process General assessment Familiarity with the concept of creative hopelessness
Session 2	Evaluating Performance Investigating the reflection of previous session in the person's life Checking homework and discussing creative hopelessness
Session 3 & 4	Evaluating Performance Investigating the reflection of previous session in the person's life Examining homework and introducing control as a problem not a solution Familiarity with the concept of willingness-acceptance Behavioral commitment
Session 5 & 6	Evaluating Performance Investigating the individual's experiences of previous sessions until now Examining homework and Behavioral commitments Familiarity with the concept of self as the context and the concept of cognitive dissociation Familiarity with the concept of cognitive dissociation Exercise of behavioral commitments and homework
Session 7 & 8	Evaluating Performance Investigating the reflection of previous sessions in the person's life Reviewing home exercises Familiarity with the concept of values Increasing concentration on the Behavioral commitments

al. (2005) examined the psychometric properties of the Persian version of the Beck depression inventory on 125 Iranian students from among Tehran University of Medical Sciences and Allameh Tabataba'i University; they reported the alpha coefficient of 0.87 and the coefficient of re-test of 0.74 (Quoted by Issazadegan in 2006). In addition, Bakhshai (2002) reported the correlation between Beck questionnaire and Hamilton depression scale to be 0.93.

Data collection was done using the questionnaire for a group in the Treatment Center for the Iranian Epilepsy Association. Beck Depression Inventory was performed on patients with depression symptoms. After that, 30 people who received the required score in the test were selected and randomly assigned to the control and experimental groups. The identified subjects , had a high degree of depression symptoms and they were randomly assigned to experimental (15 subjects) and control (15 subjects) groups. After the pretest, the experimental group received the acceptance and commitment therapy for 8 sessions and each session for 60-90 minutes. At the end of the sessions, a post-test was performed on them. The control group was under no intervention and only the pre-test and post-test were performed on the experimental group. In observing the ethical requirements of the research, these individuals benefited from a free session in communication skills. The inclusion criteria for participating in the research included: individuals with Epilepsy referring to Iranian Epilepsy Association, receiving the score 20 and above in the BDI-II test, lack of history of drug use and psychotropic drug use, lack of psychological treatment history, lack of use of psychiatric drugs, lack of history of psychiatric disorders, and their acceptance to participate in the research project. However, the exclusion criteria included: reluctance to continue working with the researcher, not attending and delaying 3 treatment sessions.

Descriptive indicators such as frequency, standard deviations of variance, etc. were used to describe the data. One-way covariance (ANCOVA) was used for the statistical analysis.

Research Findings

According to Table 1, there were 15 people in each of the control and experimental groups; the same number of participants were also involved in the post-test without downsizing.

Table 1: Frequency distribution of participants in the experimental and control groups

Groups		Valid		Lost		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
Pretest	Experiment	15	100	0	0	15	100
	Control	15	100	0	0	15	100
Post-test	Experiment	15	100	0	0	15	100
	Control	15	100	0	0	15	100

In this study, 16 participants were male (53.3%) and 14 were female (46.7%). Table 2 shows the frequency of gender by the experiment and control groups. Among the participants in the experimental group, there were 8 women (26.67%) and 7 men (23.33%), and the control group consisted of 6 women (20%) and 9 men (30%).

Table 2: Frequency of Gender of Participants in Experimental and Control Groups

Gender	Groups	Frequency	Percentage	Valid percentage	Total	Total percentage
Women	Experiment	8	26.67	26.67	14	46.7
	Control	6	20	20		
Men	Experiment	7	23.33	23.33	16	53.3
	Control	9	30	30		
Total		30	100	100	30	100

Table 3 shows the descriptive indicators of the age of all participants in this study. According to the information given in this table, the age of the participants ranged between 20 and 35, with an average age of 28 years. The amount of kurtosis of the age between +1 and -1 indicates the normal distribution of the age of the participants.

Table 3: Descriptive indicators related to age of participants

Number	Minimum	Maximum	Mean	Standard deviation	Kurtosis	Standard error of kurtosis	Skewness	Standard error of skewness
30	20	35	27.8667	4.50083	0.013	0.427	-.792	.833

Table 4 shows the descriptive indicators of the age of the participants in the experimental and control groups separately. Accordingly, the age of the participants in the experimental group was between 20 and 35, with an average age of 27.8 years. The age of the control group ranged between the ages of 21 and 35, with an average of 27.93 years. The kurtosis of the individuals' age between +1 and -1 indicates the normal distribution of the age of the participants in the two groups.

Table 4: Descriptive indices of age of participants in experimental and control groups

Groups	Number	Min.	Max.	Mean		Standard deviation	Kurtosis		Skewness	
				Statistic	Standard error	Statistic	Statistic	Standard error	Statistic	Standard error
Experiment	15	20	35	27.8	1.37	5.32	-0.019	0.580	-1.25	1.121
Control	15	21	35	27.93	0.95	3.69	0.179	0.580	-0.111	1.121

Diagrams 1 and 2 show the frequency distribution of the participants in the experimental and control groups. The curve of the diagrams also indicates the normal distribution of the frequency of the age of the individuals.

Diagram 1: Frequency Distribution of the age of the participants in the experimental group
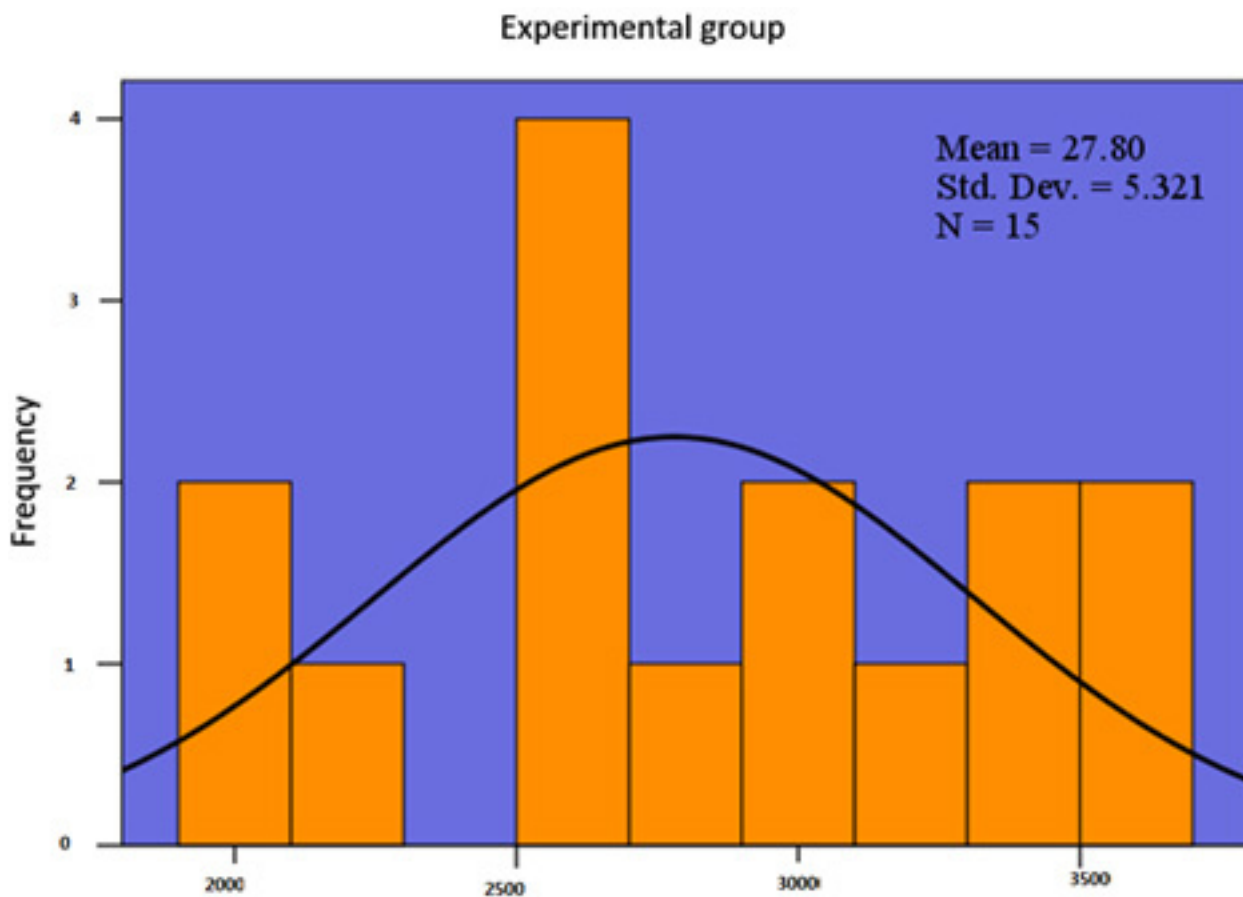
Diagram 2: Frequency Distribution of the age of control group participants
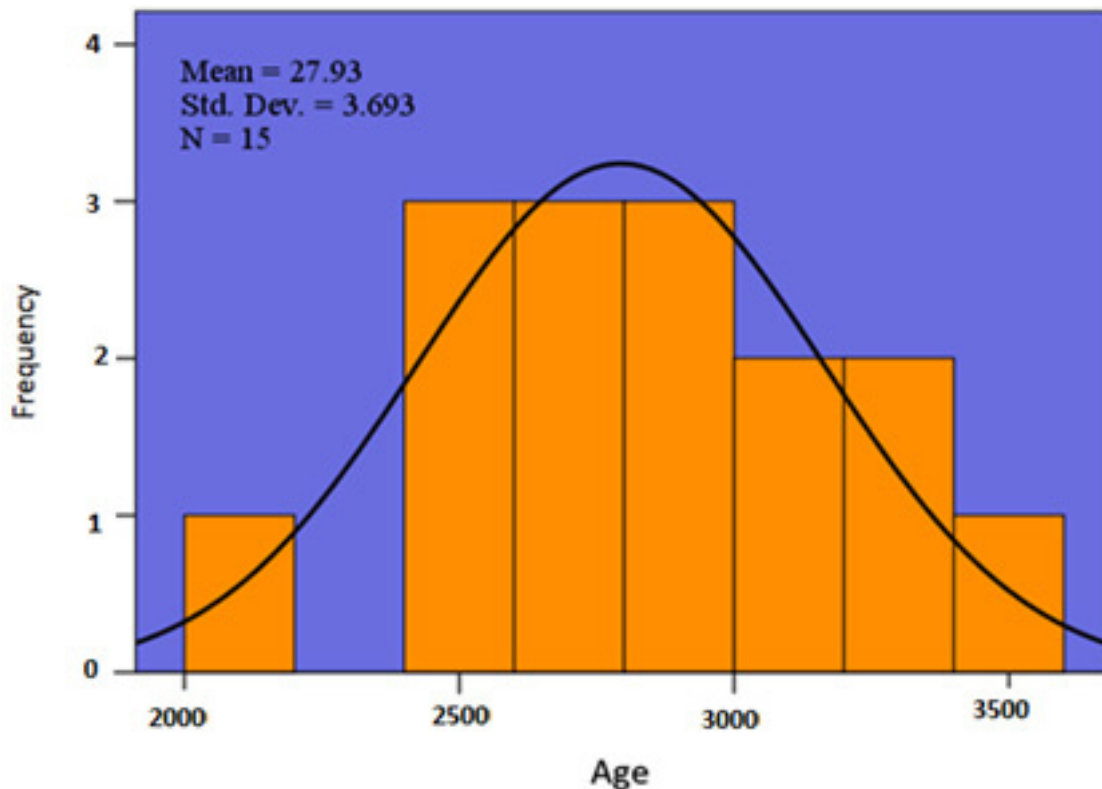

Control Group

Table 5 shows the descriptive indices of central tendency and the dispersion of depression scores in the pretest and posttest groups. According to the data, the mean scores of depression in the pre-test of the two groups did not differ significantly. In the post-test, the depression scores of the experimental group decreased significantly. This can indicate the effect of the acceptance and commitment therapy on the depression scores in people with epilepsy. Negative values of the kurtosis of depression scores in all conditions implied a lack of distribution of people's scores around the mean that led to the expansion and lowering of the height of the normal distribution diagram.

Table 5: Descriptive indices of depression scores of control and experimental groups in pre-test and post-test

Groups	Scale	Number	Min.	Max.	Mean		Standard deviation	Kurtosis		Skewness	
					Statistic	Standard error		Statistic	Standard error	Statistic	Standard error
Pretest	Experiment	15	28	43	36.67	1.23	4.76	-0.384	0.580	-1.061	1.121
	Control	15	31	43	37.73	1.08	4.18	-0.128	0.580	-1.371	1.121
Post-test	Experiment	15	19	32	25.47	1.05	4.09	-0.039	0.580	-1.147	1.121
	Control	15	28	40	33.93	1.03	3.99	-0.021	0.580	-1.42	1.121

Rectangular diagrams 3 to 6 show the distribution of depression scores in the pre-test and post-test of the experimental and control groups. Based on the curve of the diagrams, the normal distribution of depression scores can be evaluated in different situations.

Diagram 3: Distribution of depression scores of subjects of the experimental group in the pre-test

Experimental group

Mean = 36.67
Std. Dev. = 4.761
N = 15
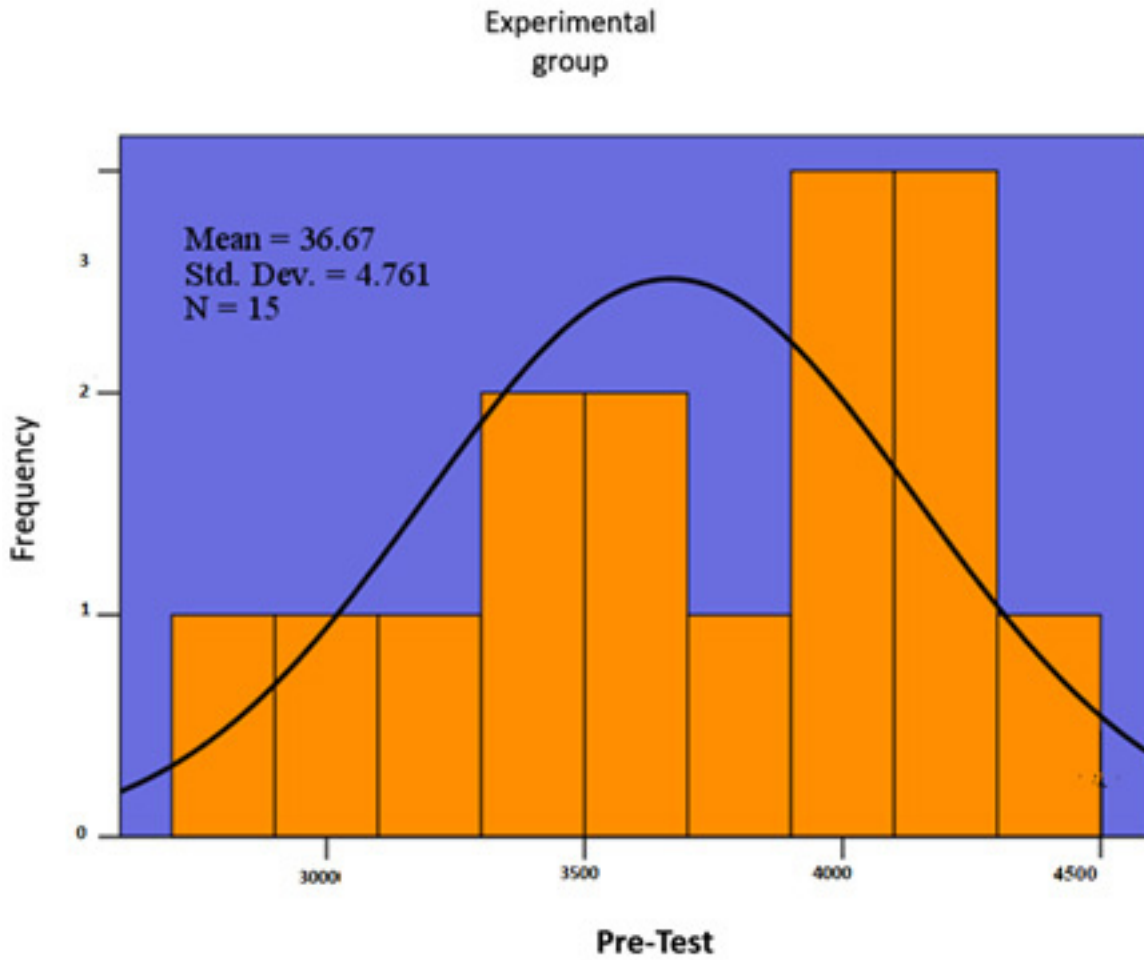
Frequency / Pre-Test

Diagram 4: Distribution of depression scores in the control group in the pretest

Control Group

Mean = 37.73
Std. Dev. = 4.183
N = 15

Frequency / Pre-Test

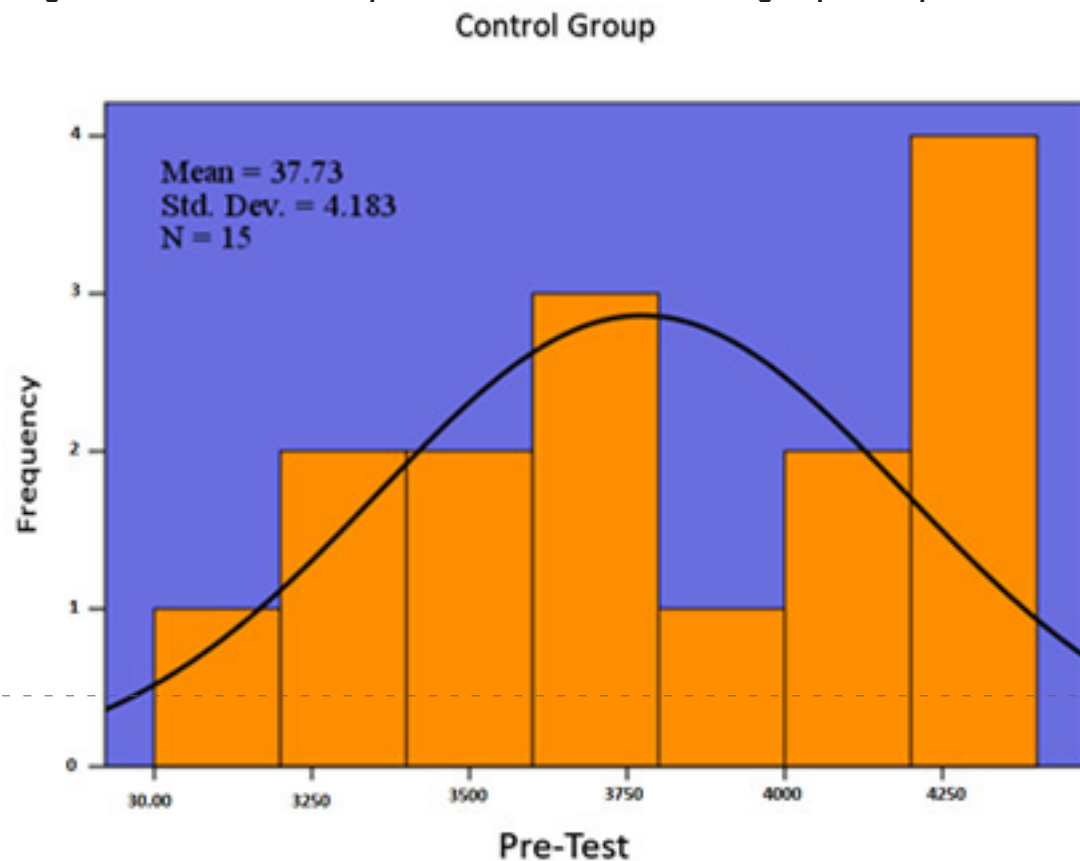**Diagram 5: Distribution of depression scores in the experimental group in the post-test**
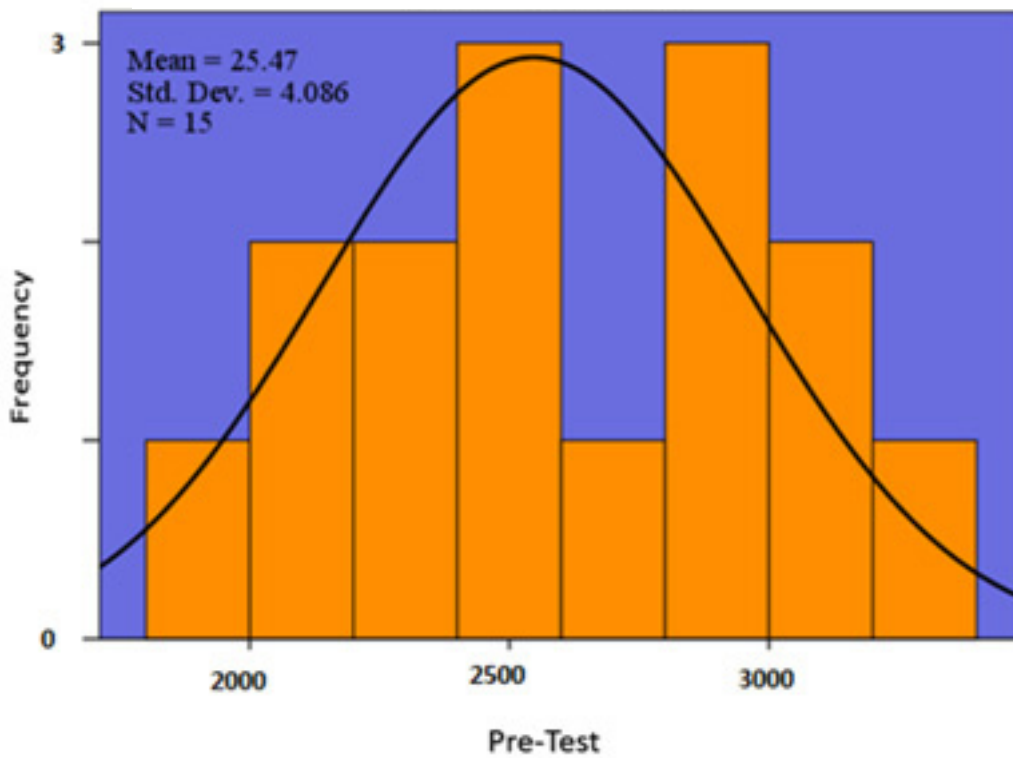

Experimental group, frequency, post-test

Mean = 25.47
Std. Dev. = 4.086
N = 15

Diagram 6: Distribution of depression scores in the control group in the post-test

Control group, frequency, post-test
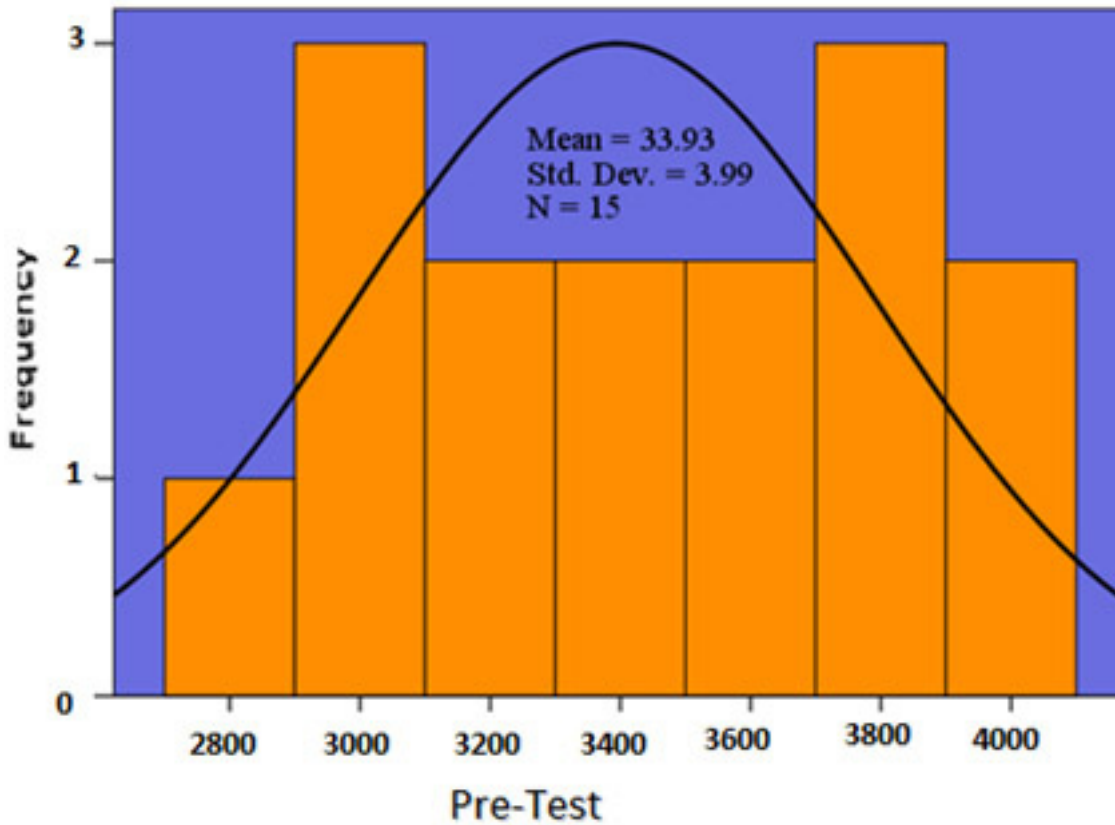
Mean = 33.93
Std. Dev. = 3.99
N = 15

Table 6 shows the results of statistical analysis of interactions between the groups and pre-test. As shown in this table, given that the significance level of the interaction was greater than 0.05, it can be safely stated that the assumption of the homogeneity of the regression slopes has not been violated.

Table 6: Statistical Results of Interaction between the Groups and the Pre-Test

Sources	Total squares	Degree of freedom	Mean squares	F	Significance level	Parabola eta square
Groups	0.426	1	0.426	0.089	0.768	0.003
Pretest	331.764	1	331.764	69.360	0.000	0.727
Groups interaction* of pretest	9.444	1	9.444	1.974	0.172	0.071
Error	124.364	26	4.783			
Total	27457.000	30				

Table 7 shows the results of the main test of covariance analysis, the test of the effects between the subjects. After adjusting the pre-test scores, there was a significant effect of the factor between the subjects of group (p=0.000 ‹ $F_{1,27}=87.433$). The adjusted means of depression suggested that the experimental group that was being treated with acceptance and commitment therapy was significantly less depressed compared to the control group. Also, the eta square (0.764) indicates that there was a strong correlation between the independent variable (therapeutic intervention) and the dependent variable (depression of individuals). In other words, about 76.4% of depression variance was explained by the therapeutic intervention. Also, this table shows that there was a significant relationship between pre-test and post-test scores (p = 0.001, ETA = 0.707); in other words, the pre-test has played a role in explaining post-test scores of about 70.7%.

Table 7: Results of the tests of the effects between the subjects (dependent variable: depression)

Sources	Total squares	Degree of freedom	Mean squares	F	Significance level	Parabola eta square
Depression of pretest	322.859	1	322.859	65.147	.0000	.7070
Groups	433.305	1	433.305	87.433	.0000	.7640
Error	133.808	27	4.956			
Total	27457.000	30				

Table 8 shows the adjusted means of depression scores in post-test (dependent variable) for control and experimental groups.

Table 8: Adjusted means of post-test depression for control and experimental groups

Groups	Mean	Standard error	Limits of 95%	
			Lower limit	Upper limit
Experiment	25.871	.5770	24.687	27.055
Control	33.529	.5770	32.345	34.713

Discussion and Conclusion

The results of the covariance test of the present research showed that the difference between the experimental and control groups in the depression variable was statistically significant with p = 0.000, F = 87.433. Moreover, the Eta square of 0.764 means that about 76.4% of the variance of depression was explained by the Therapeutic intervention. The above findings were consistent with the results of Ton and Broni (1986), Goldstein et al. (2003), Bloom et al. (2004), Bainberg et al. (2005), Martinewick et al. (2006), Eckinsi et al. (2009) Praira and Valent (2013), Seghatoleslam et al. (2002), Najafi et al. (2010), Salehzadeh (2010), Hashemi et al. (2010), Salehzadeh et al. (2011) in the psychological interventions in epilepsy and Foreman et al (2007), Gaudiano et al (2007), Patterson and Zettel (2009), Hayes et al. (2010), Hayes et al. (2011), Moto (2012), Gaudiano et al. (2013) in the acceptance and commitment therapy in reducing the symptoms of mood disorders.

ACT is a therapeutic approach that uses acceptance processes, and focus of the consciousness and behavioral change processes to create flexibility (Hayes & Masuda, 2006). ACT is not a treatment method of abnormality, but rather it is a general approach that can accelerate the development of many protocols and focuses on specific problems of patient populations. ACT is scientific knowledge on the formulation of behavior and linguistic relations by a more effective therapeutic method (Hayes et al., 2007). The core of the change in ACT is the change in the internal (soliloquies) and external (performances) verbal behaviors. In the ACT method, it can be said that fighting with the emotions worsens them (Saudra, 2007).

Acceptance and commitment therapy is a therapeutic approach that uses acceptance processes to focus on instantaneous awareness, commitment, and behavioral change processes to create psychological flexibility (Hayes, 2012). The acceptance and commitment therapy is based on the increasing acceptance of awareness and communication with the present moment and participation in the activities that are in line with personal values. Acceptance, the key process involved in the therapeutic outcomes seems to reduce the effect of painful experiences on emotional functions, as well as predicts the individual's future functions. The main structure of acceptance and commitment therapy is psychological flexibility, which means, despite the presence of problems and suffering, it is the ability to perform effective actions in line with individual values (Hays et al., 2012). The results of the research indicated the importance of mental acceptance, regarding psychological performance. Those clients who report that they tend to experience less negative psychological experiences, the unpleasant emotional experiences, thoughts and memories, showed a better social, physical and emotional performance (Zettl, 2007). Many researchers have shown that avoiding experiences was associated with a wide range of psychological and behavioral problems. People who are more inclined to suppress such experiences, when stresses and worries occur in school, the workplace, conflicts in relationships with the spouse, etc., their endeavor to control their distress makes them more severe. Hayes (2006) also believed that the acceptance and commitment therapy, instead of focusing on eliminating harmful factors, helped clients to accept their controlled emotions and emancipate themselves from controlling language rules that caused them problems and allowed them to stop the conflict within them. ACT is essentially process-oriented and clearly emphasizes the promotion of acceptance of psychological experiences and commitment to increasing valuable, flexible, adaptive activities without considering the content of psychological experiences, a feature that is not present in most psychological therapies, including Behavioral cognitive therapy. Secondly, the purpose of therapeutic techniques used in the acceptance and commitment therapy is not to increase the effective and logical thinking or to encourage emotions, rather the purpose of these therapies is to reduce the avoidance of psychological experiences and to increase their awareness, especially the conscious relationship at the moment, through taking a non-conflictual and non-evaluative way.

The goal of this treatment is to improve function by increasing the level of psychological flexibility. Studies have shown that the group that experienced treatment with this approach had higher function and better quality of life than the control group. One result of the studies on the effectiveness of acceptance and commitment therapy was to improve the physical, psychological, social, and emotional functions (Hayes et al., 2012). In explaining these results, it can be concluded that although the medication and therapeutic interventions or even other psychotherapeutic methods may have a significant effect on the reduction of physical discomfort and signs and complaints, acceptance and commitment therapy has also been able to show this effect well. It seems that according to the results, for the treatment protocol and the condition of the patients in the treatment sessions, each of the therapeutic concepts has been effective in reducing the symptoms of depression in people with epilepsy. For example, in the process of creative hopelessness, the client must realize that he has so far made a lot of effort to solve the problem, but the problem still remains unsolved (Izadi and Abedi, 2013) and the control as the problem itself, not a solution to the problem, has been able to reduce the disturbing thoughts by converting empirical avoidance into empirical acceptance and cognitive fusion to cognitive dissociation. Also, attention in the present time and the clarification of the values and realizing them have led to a reduction in their focus on their past, and as a result reducing the symptoms of depression.

Generally, in acceptance and commitment therapy (ACT), psychological flexibility replaces various other clinical methods for mood, anxiety, physical disorders and so on. In addition, the client recognizes the change in the targeted treatment process, including the reduction of empirical avoidance and dissociation of thoughts and beliefs related to the problem. Therefore, although the purpose of ACT is not to directly reduce the symptoms of the problem,

including depression, obsession, anxiety, communication problems, etc., the patients experience less distress at the end of treatment. They also experience significant changes in depression and the scales of distress. Additionally ACT is to live worthily and address those barriers that make it difficult to reach this kind of life. Perhaps the reason that this treatment has been effective in a wide range of psychological disturbances and disorders can be related to the aforementioned points.

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The Status of women in Baluchi epics

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Abstract

The formation of the most famous Baluch epics like "Bānaly and Dehli conquer", "Rend and Lashār", "Kambar", "bālāč", "Lallā", and "Adinag" are on the basis of the ethnic and regional values and maintaining these values has led to devastating and debilitating wars between nations and women in these epics have always had an essential role as agent or stimulus.

Introduction and status of women in each of these epics, which are especially popular, has been analyzed. The aim of the author of this study was introducing Baluchi literature and culture and also, the most famous women in the Baluchi epics for researchers and lovers of literature of Baluch.

Many books have been written about verse literature of Baluch but no significant work has been written independently in the field of Baluchi women's epics recognition. Certainly, this is the first independent study of this field and the author, in this paper, focuses on the compilation using literary review method.

Key words: Epic, Baluch, Woman, Bānaly, Gawhar, the mother of Kambar

Introduction

"Epic, is the adjectival form of poems that (are) based on describing the ethnic or individual heroic and masculine actions which include various aspects of their lives" (Safa 1378: 24).

Epic, history and romance poetry have been quoted for centuries from generations from the farthest parts of Baluchistan, despite the extent of the territory and today have come to the new generations.

"Baluchi epic poetry" like other epic poems in the world is a mix of combat and feasting. Epic battles, praise of heroes, 'Cites' , ethnic beliefs, different battles, migrations and the Baluchi's wars with foreigners are the topics of these poems" (Baluch, 1391: 15).

Poetry, which is called "Shaire" in Baluch, is the song which is the theme of the epic or romance stories, historical and social events, information etc.

The poet is the person who runs the Shaire, with an instrument and singing which is also called Pahlavān (1). Phlavān is a combination of two words "Pahlaw" and "Van". Pahlaw is derived from the root of Pahlavi language and means brave, brave and powerful and Van means singer. "Vānag" in Baluchi is the meaning of singing so Pahlavān can be interpreted as singer, courage and heroism provider. Baluchi Pahlavān not only presents the historical realities of Baluchistan and maintains them for other generations, but can change the course of historical events (Masoudie, 1364:9).

The most important Baluchi poem collections are:

1- Epic collections: Rend and Lashār, Mir kambar, Salār and shahsavār, and Hammal.
2- Historical collections: Dādshāh.
3- Romantic collections: Ezzat and Mayrok, šaymorid and Hāni, Jalal khan, Sassy and Ponno, Shirin and Dōstēn, Shahdād and Mahnāz, and Samanbar and Heidar.

Because of the diversity of ethnic, geographic, climate, governmental, economic and cultural aspects, different parts of Baluchistan have various accents, proverbs and stories of their own which are for the sake of living, the government, and other factors of life.

The background of Baluchi literature research is recognised by the recent centuries, firstly for foreign researchers. The most famous of them was M. Longworth dreams .

In addition to foreign scholars, Baluch researchers in Baluchistān of Pakistān such as Seyed Zohour Hāshemi, Faghir shād, Golkhān Nasir, and Karim Dashty are presented. Baluch researchers in Baluchistan of Iran have also partly completed research in the field of literature and culture of Baluch. Though researchers of Baluchistān in

Pakistān were more fortunate because they had access to more resources and published works. From Baluch researchers of Iran's Baluchistān we can refer to Mousa Mahmoud Zahi the author of "Celebrities of Baluchistān", "Beliefs, regulations and culture of Baluchistān", "The art of Baluchistān" and Abdolhossein Yadegari, the author of "Baluch people epics", Azim Shahbakhsh the author of "the story of Dādshāh, in research of Contemporary History of Baluchistān", Abdolsamad Hamidifar the author of a master thesis entitled "Morphology of šaymorid and Hāni" and 'Manuscript collections of Shaikh and Rendan and Hāni', by Abdolvāhed Borhāni.

But no significant independent research has been written on the recognition of the epic women and their status.

Epics that have been proposed in this paper, are recorded as a poem in the book "Miras (2)" by Faghir Shād, and these stories are common orally with different versions among the Baluch people.

Baluchi glossary by Sayed Zohor shaāh hāshemi is used in most cases to translate the vocabularies. Many of the poets of the poems are unknown and the stories are ancient, about Iran's Safavids era. In some parts of the paper, Baluchi poetry is mentioned with transliteration and translation, for example are Taken from the book "Epic in Baluchistān by "Abdulghafour Jahāndideh". Literary review method was used.

The author has tried to analyze a number of women who have a role in the epics of the Baluch like "Bānaly and Delhi conquer", "Rend and Lashār", "Kambar", "bālāč", "Lallā" and "Adinag" and their roles as an agent or stimulus.

Baluch epic is about women's destiny which has made Baluch history. Many of these women are representative of the society and culture where the woman is not just lowly , but sometimes even higher than men's status and obviously such a woman is raised from Baluchistan.

Women in Baluch culture are respected as a taboo, and an affront to their character is not an offense that can easily be devoid of consequences.

It seems that some of the women's freedom and power and exceptional bravery in Baluchi poems demonstrate respect and dignity of women among people who have promoted the narratives and stories. In these poems the most prominent women are from big families and large ethnic groups. These epic characters are unique and living women.

Women also have a special place in one of the most prestigious Baluch Alliances and her portrayal is that of a refuge . For someone who wants to be free of oppression and puts themself under the protection of another powerful person, it is sufficient to say: "I'm "Mayār" of your wife's wearing (hijab)" and then that person supports and protects

(1) *Paladin*

(2) *Legacy*

him forever. The anonymity of the Baluchi language and literature in Iran and the lack of resources required the writing of this article to be partly analytical.

"Bānaly and Delhi conquer" epic
Bānaly or Bānary compared to the rest of Baluch women has more courage and bravery and she was manifest as the perfect woman.

Bānaly is čăkar's sister and mirān's mother, and wears combat clothes and participates alongside Baluch men in a war called "Dehli war ".

In Dehli war, about one hundred and thirty thousand men of Baluch including " čăkar» and «Mirān" were present. Gwahrām, is made aware of the King of Delhi and says:

šah tayār baw laškar o pawgā   That the Shah (king), with your army (be) alert [to fight]

The Shah of Delhi was fully prepared to fight with the Baluch people. Baluch people had a fierce battle with Delhi's King. Čăkar was ordered to retreat hobson either by policy , however, midway noticed that Bānaly and some of the riders were absent. Given Mirān's long-standing hatred of Delhi's Shah, he returned to the palace. He found Bānaly and Shah fighting. Mirān shouts angrily at Shah: "the one who fights with you is a woman". Shah says to Bānaly: "So you're a woman, get out of the way ". Bānaly Responded to King:

Ag ganēnē yān tai gan e hazmān if I'm a woman, I'm not like other women, and I am even better than your wife.

Gan hamā gant ke mētagān nendant   Woman would say to someone who sits at home.
Panno mozwāko mahparān randant
Gōn wati mardān dazgolā?āš ant

Women are made for their husbands.

Man ganēna pa magles a naylān   I don't like such woman and I won't accompany them. (pages 279-280)

Bānaly, who was a skilled fencer, with her son Mirān, prevailed on the Shah of Dehli.

Bānaly's persistence and courage caused a Baluch victory in the war with the King of Dehli. Bānaly's warfare, reminds us how Gord was afraid to fight against Sohrab in Shahnameh. Although in this the war, there were many Baluch tribes and also great commanders such as Čăkar. But this epic with Bānaly's name became well known and her name now has a deep root in the ancient culture of Baluch.

Epic of Rend and Lashār
Gawhar, Radow's daughter was a widow with abundant wealth. The remnant poetry contains this upbeat passage that after the returning of Lashār's army from the Delhi

battle, gwahrām the Lashāri and the Nohāni commander remembers that no tax from Gawhar, a wealthy woman who sponsored him, was not received. He sends some persons of Lashāri and Nohāni tribes to Gawhar in order to talk and collect taxes. When Gawhar hears the words of the messenger of gwahrām she answers that: "If God has endowed me wealth, Gwahrām must not to be greedy about that. Is he teased me because I live on his estate? If it is so, I cannot leave here and go elsewhere.

After hearing her taunts Gwahrām's special messenger arises without objection but Nohānis was not satisfied and did not leave; they gave away the properties inside the tents and thenleft. After that, Gawhar moved from there without delay and goes to the Čăkar and tells him:

Gwar taw atkagān bāhōti   for protection, I come to you
Čihēn o bečār gangāhē\consider a place for me and prepare it now (p 171)

Gwahrām found that Gawhar moved and sent some of his men to bring her back to kaččarō. They attacked her camp and looted all her assets. They even killed her cattle and camels and returned to Lashār.

This blatant violation of the privacy of a woman, who was a refugee of a proud man like Čăkar, obviously started the Thirty Years' War between Rand and Lashār.

Gwahrām, who attacked nightly and was lucky to get away, was ready to stand against a wounded leopard of Rend. But Čăkar had seen the cowardly betrayal of Gwahrām and mindless and with the onslaught of emotions, only with a number of troops and weapons left to pursue the attackers. Gwahrām with forethought deployed his corps and waited for Čăkar's army. The corps was defeated in the war and lost one of their skilled fighters (mirān. In the later war, the twenty-fifth war. Gwahrām went to "Send" in order to provide crops and hired warriors from "Samme" and "Botto" tribes. Čăkar went to Herat's King Arghun for help. He won in the final battle.

Gawhar was the main cause of the ruinous war between Gwahrām and Čăkar.

This invasion of Gawhar's privacy was in fact an invasion to Čăkar's, and he felt damaged himself.

Epic of "Kambar"
A large army led by Mehrāb, Osman and Mazar from the East of Baluchistan on the pretext of getting taxes moved to the south and in any area where they arrived, looted their properties and captured men, girls and women. This army arrived in Malōrān, Bent and Dahān. The herds of the Malōrān were looted and killed; also many men and women were captured. One of the soldiers went to Bent and let Kambar know this. Kambar was upset to hear this because he was the guardian of property and dignity of the people and people were protected by him.

Kambar firstly went to his mother and said:

Māti mani māt makkahēn   Mother, my dear mother;
Hakkān pahel kan ke rawān   forgive me, now I'm
going (page 557)

The mother of Kambar answers:
Šir et pahell ent bač mani   I forgive you my son

Man pa tai rōdēnag o   Bāz kašš etag gawr o gapā
I've suffered so much for your growing

Then she continues: When you go to war and release captives, and return triumphant, then friends, will talk about your masculine fighting. If you were killed, even if I was old I will be young and sing the song of happiness. Your body will go to the cemetery with lyrics and song, I'll rejoice sennight , and I'll remarry and will breed another child instead of you. Mir kambar said good bye to his mother and called his wife. His wife came out with ornaments and makeup and told him: We are newlywed; it's just a week we are married. Kambar gave her three Gold coins and said: dear wife, this is your divorce and Mehrieh, you have now freedom to remarry because I might get killed in war. Kambar went to battle with his army; many of the looters were killed in this war and all the prisoners were released, but Kambar was killed. His mother buried his body with happiness.

Kambar's mother was the only one who encouraged Kambar to go to war. She was a brave woman for whom name and shame was more important than all else, for her although the name and shame was at the expense of losing her son. Her courage reminds us of the mother of "Hasanak Vazir" in "Beyhaghi history" or perhaps "Golmohammad's" mother in "Kelidar's" novel by Dolat ābādi , perhaps above them.

Epic of bālāč
Sammi was a Wealthy widow and lived in Dōdā neighborhood. Someone called "Bibagr" who was one of the rulers, attacked her house and plundered all her property including the cattle herd. Sammi brings the news to Lālēn (Dōdā's mother).

Lālēn goes immediately to the Dōdā's house and says:

ā mard ke mayārān gall ant   The man who takes refuge

n Nēmrō čān a nawapsant kollān   Do not sleep in the middle of the day in a room

Dōst o šarsarēn grānmollān   with his beautiful wife

Dōdā, hearing taunts of his mother Lālēn, arises, and prepared to return the cattle of Sammi. First he divorced his wife so that he was not her dependent on the battlefield or if he was killed in the war; his wife wasn't a widow and could marry another man.

Lālēn encourages her son to fight with enemies and says:

Nāzēn et mani baččig a Praise my son
Bačči ča dowa yakkē kant   My son will do one of two things:
Hayši čōtawān bāzēn it   or loses his precious hair (will be killed)
Gōkān sargamig a kārit   or all the cows, [those looted] will be returned.

Dōdā moves with his comrades and with his little brother Bālāč who at that time was very young following him, but Dōdā stopped him. Dōdā said:" You stay at home, if we die, take revenge on the enemy".

Bālāč returns home. In the "Garmap" area Dōdā arrives at Bibagr's crops. Bibagr, who was ambushed, attacked Dōdā's army and killed him and his colleagues in a hard battle.

Their blood will not be overwhelmed. Bālāč and Nakibou became allies to take his revenge. Years, Bālāč was lurking with Bibagr. Until one day he sees Bibagr from afar and kills him immediately.

Sammi is the main cause of this war. Bibagr had unfairly invaded her privacy and it was in fact invading Dōdā's because Sammi was his refugee. Lālēn is aware of refuging. She ordered Dōdā to take back Sammi's looted properties. Lālēn even encouraged Bālāč to revenge. She reminds us of the mother of Kambar.

Epic of Lallā
Granāz was Lallā's wife and Mirbaran's daughter. Mirbarān who was Chieftain with his sons and son in law (Lallā) went to battlefield. Mirbarān and his sons and brothers were killed in war and Lallā was severely injured and one of his comrades was taken out of the arena. Others reported his survival to his wife, in other words:" He fled from the battlefield". Granāz who lost her father, brothers and uncles became very angry and messaged to her husband: "I wish I heard your death news instead of your escape. Then I spoke with pride about you and praised your courage ".

Granāz didn't welcome him at home and Lallā went to his mother's house to have his wounds treated. He answered his wife: "I've not escaped from war, I am hurt and my companion brought me out of the field, When my wounds are treated I'll return to the battlefield to take revenge.

Finally he recovered and took revenge and went back home.

Granāz in this war encouraged her husband to fight, with sarcasm and she wished if her wife died or took revenge.

Epic of ādinag
One day, "Čakar ku lovahi" and his men passedby. Along the way, they saw "āli" ride slowly, a female animal. One of the Čakar's men called him and said: Ride faster. Āli answered: The animal is incapable and cannot go fast.

The man said ridiculously and impolitely: then you have to mate with her to cure her disability. Āli became angry and answered: do it with Čăkar's mother because she is a strumpet.

Čăkar's men took Āli and tied his hands and legs like animals and put grass out for him. When they arrived home he said to his daughter: we tied an old man in the pampas, go and take care of his food and water. Fatimah guessed that old man was her father.

She asked her husband (Adam) immediately to go that place. He found Āli but Āli didn't want to come back home and said: how do I return home while people tease me? Adam answered: my uncle I promise to revenge otherwise I'll never go to bed with my wife. Ādinag, an old son of Āli said: I promise to revenge otherwise I'll never speak to anyone. Waždi, the other son of Āli said I'll never take my shoes off until I have revenge.

After these covenants one day early Adam was washing his body, people saw him and gossiped that Adam was not committed to his promise. He went to bed with his wife last night and took ritual in the morning. Of course, people either did not know or pretended to ignore that Adam was washed because of his autoerotism during the night. Rumors reached Fatimah and made her angry .she said then:

Ali tai čărēn bač mabitēn ant	Āli, I wish you had not four children
Ali tai čărēn bač ganēn etān	Āli, I wish your sons were born daughters
Dāštagēn zāmāt et darēn etān	and your son in law wasn't in your family

And then you weren't teased. Adam answered: You know that I have not broken the covenant.

Fatimah said: Why you do not take revenge?

Fatimah's words made her husband more determined.

Adam attacked Čăkar's palace with Ali's sons. Čăkar was lucky in this war. Some of Ali's men were killed. Ādinag, Ali's older son ordered retreat. Later in another opportunity Čăkar who was moving to his farm, was killed by Ādinag.

In this war Fatimah's sarcasm causes Adam to be more determined to take revenge.

Conclusion

Factors that led to the formation of these epics were due to adherence to these values:

1- Mayārgalli: asylum is one of the most valuable traits of Baluch heroes. (Gawhar found refuge of Čăkar and Sammi found refuge to Dōdā).

2- Bēr: what made Čăkar, Kambar,Dōdā,Bālač,Lallā,Adi nag and Bānaly popular, was masculinity and feeling of vendetta. They are historical remnants and portray enmity and hatred from these characters against their enemies portrays the ideals of the Baluch nation which defended the rights of the oppressed.

Women who have been raised in these epics, in fact, had a key role as a stimulant or a cause of the war.

Footnotes:
1- Accepting asylum and refugee support.
2- Revenge and avenger of the enemy.

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Case study - Chronic Obstructive Pulmonary disease

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Case study

Mr Afridi is a 67-year-old war veteran who consults you for the first time.

He complains of being short of breath on exertion. From his history and examination you suspect chronic obstructive airway disease due to a long history of smoking (20+ per day for 50 years). While he is still well you send him off for some respiratory function tests. You also order blood gas measurements and the laboratory returns the following results:

Test	Result	Normal values
pH	7.39	(7.35 - 7.45)
pCO_2	65 mmHg	(36 - 44)
HCO_3^-	39 mmol/L	(22 - 26)
pO_2	55 mmol/L	(85 - 105)

Self test

Question 1

Which ONE of the following is the most likely acid-base condition of the patient?
Select ONE only

1. Acute metabolic acidosis.
2. Acute metabolic alkalosis.
3. Acute respiratory acidosis.
4. Acute respiratory alkalosis.
5. Chronic metabolic acidosis with evidence of respiratory compensation.
6. Chronic metabolic alkalosis with evidence of renal compensation.
7. Chronic respiratory acidosis with evidence of renal compensation.
8. Chronic respiratory alkalosis with evidence of respiratory compensation.
9. Mixed disturbance.

Answers and feedback are on page ??

Question 2
What drug treatment would you implement?

Answer and feedback is on page ??

Question 3
What general advice would you give the patient?

Answer and feedback is on page 40

Continuing history

Three weeks later Mr. Afridi develops bronchopneumonia and is admitted to the local emergency room. Mr Afridi is breathless with rapid shallow respiration and is coughing up yellow sputum. On auscultation a generalised wheeziness is found in both lung fields. Blood gases are ordered and have the following results:

Test	Result	Normal values
pH	7.20	(7.35 - 7.45)
pCO2	102 mmHg	(36 - 44)
HCO3-	41 mmol/L	(22 - 26)
pO2	40 mmol/L	(85 - 105)

Question 4
Which of the following is the most likely acid-base condition of the patient?

1. Acute metabolic acidosis.
2. Acute metabolic alkalosis.
3. Acute respiratory acidosis.
4. Acute respiratory alkalosis.
5. Chronic metabolic acidosis with evidence of respiratory compensation.

6. Chronic metabolic alkalosis with evidence of renal compensation.
7. Chronic respiratory acidosis with evidence of respiratory compensation.
8. Chronic respiratory alkalosis with evidence of renal compensation.
9. Acute and chronic respiratory acidosis with evidence of renal compensation.
10. Mixed disturbance.

Answer and feedback is on page 40

Question 5
What would you do now? Select one or moe form the following list.

1. Order blood and sputum cultures.
2. Commence O2 through loose facial mask.
3. Commence nebuliser using O2 and ventolin.
4. Set up an IV line and administer steroid and antibiotic.
5. Administer O2 using an airtight mask.

Answer and feedback is on page 40

Continuing history

Mr. Afridi continues to deteriorate and is intubated and moved to the intensive care unit. After one hour of ventilation blood gases are re-ordered and have the following results:

Test	Result	Normal values
pH	7.55	(7.35 - 7.45)
pCO2	38 mmHg	(36 - 44)
HCO3-	37 mmol/L	(22 - 26)
pO2	150 mmol/L	(85 - 105)

Question 6
Which of the following is the most likely acid-base condition of the patient?

1. Acute metabolic acidosis.
2. Acute metabolic alkalosis.
3. Acute respiratory acidosis.
4. Acute respiratory alkalosis.
5. Chronic metabolic acidosis with evidence of respiratory compensation.
6. Chronic metabolic alkalosis with evidence of renal compensation.
7. Chronic respiratory acidosis with evidence of respiratory compensation.
8. Chronic respiratory alkalosis with evidence of renal compensation.
9. Acute and chronic respiratory acidosis with evidence of renal compensation.
10. Respiratory alkalosis over chronic respiratory acidosis with renal compensation.
11. Mixed disturbance.

Answer and feedback is on page 40

Results and Continuing history

Mr. Afridi now suffers from an acute respiratory alkalosis induced by over-ventilation. This occurs "over" the pre-existing chronic respiratory with renal compensation.

The level of ventilation should be titrated against the blood pH. Tissues respond poorly to acidotic states and thus one should endeavour to maintain pH within the normal range by monitoring pH levels.

Upon commencement of artificial respiration you note an immediate drop in blood pressure.

Question 7
What is the cause of the drop in BP?

Answer and feedback is on page 41

Continuing history

Mr. Afridi's ventilation rate is reduced until pH levels are stabilised. The infection settles over 5 days and he is then extubated. He is maintained under observation for a further week and then discharged home and back to your care with instructions to complete his course of antibiotics and to continue with his inhalers.

At Mr. Afridi's first visit after discharge you discuss with him an asthma 'action plan'.

The following is a copy of an Action Plan for Chronic Obstructive Airways Disease.

ACTION PLAN FOR COPD

1. Reliever ....
2. Preventer ....
3. Prednisolone ....
4. Other ....

Worsening symptoms
• More wheezy or breathless
• Reduced energy for daily activities
• Increasing tiredness and poor sleep
• Change in amount and/or colour of phlegm

Medication for worsening symptoms
1. Reliever
2. Antibiotic
3. Prednisolone
4. Contact your doctor if not getting better

Remember
Keep as active as possible
Have you had your flu vaccine (annually)
and pneumococcal vaccine (5 yearly)
Home oxygen prescription (if applicable)
....................................litres/minute................hrs/day

Lung function test result. ....
Date of test ....

For severe attack
You should act immediately
Call an ambulance
Say "Severe Emphysema"
Give your address or location

Continuing history

Mr Afridi says that he found the period of intubation very uncomfortable and distressing. He makes an impassioned plea that if the same situation were to arise again he categorically refuses to be intubated again.

Question 8
Having been told this, and assuming that a similar situation arises, what are your rights and responsibilities regarding the patient's wishes?

Answer and feedback is on page 41

Answers and feedback

Question 1
Which ONE of the following is the most likely acid-base condition of the patient? Select ONE only.

1. Acute metabolic acidosis.
2. Acute metabolic alkalosis.
3. Acute respiratory acidosis.
4. Acute respiratory alkalosis.
5. Chronic metabolic acidosis with evidence of respiratory compensation.
6. Chronic metabolic alkalosis with evidence of renal compensation.
7. Chronic respiratory acidosis with evidence of renal compensation.
8. Chronic respiratory alkalosis with evidence of respiratory compensation.
9. Mixed disturbance.

The Authors' answer is 7.
Chronic respiratory acidosis with evidence of renal compensation.

Feedback
The presence of an elevated CO_2 level indicates a respiratory acidosis. The concomitant elevation in plasma bicarbonate also indicates the production of bicarbonate by the kidney as a renal compensation for the respiratory acidosis. Thus the correct diagnosis is respiratory acidosis.

Question 2
What drug treatment would you implement?

Authors' answer
Commence a program of appropriate inhaled bronchodilator and inhaled steroids

Feedback:
The effectiveness of bronchodilators in treating chronic respiratory disease is dependent on the level of bronchospasm present. The potential effectiveness of bronchodilators in this condition can thus be predicted by the level of acute improvement seen in forced Expiratory Volume in 1 minute (FEV1) immediately following bronchodilator treatment. In cases of relative refractoriness to brochodilators, 4 weeks of steroid treatment can in some cases reverse the inflammation and improve airway caliber and responsiveness to bronchodilators.

Question 3
What general advice would you give the patient?
Provide two separate items of advice.

Authors' answer
• Stop Smoking.
• Notify doctor if changes suggesting respiratory infection occur.

Feedback:
Cessation of smoking occurs in less that 20% of people who are advised to do so. In the elderly who have smoked for the majority of their lifetime, the success rate would be significantly less. Nevertheless, individuals should be counselled about the importance of stopping smoking as this gives the lungs the opportunity to self repair. The use of nicotine patches may be beneficial in this regard.

Some elderly male patients may be resistant to seeking medical assistance. It should be impressed on Mr Afridi that he obtain a medical check on the earliest sign of a cold or 'flu' as this has the potential to be life threatening.

Question 4
Which of the following is the most likely acid-base condition of the patient?

Author's answer
This condition represents a state of combined acute and chronic respiratory acidosis with evidence of renal compensation.

Feedback:
The condition actually represents a 'decompensated' chronic respiratory acidosis sometimes referred to as a condition of 'acute over chronic'.

Question 5
What would you do now?

Authors' answer
Order blood and sputum cultures.
Commence O2 through loose facial mask.
Administer O2 using an airtight mask.

Question 6
Which of the following is the most likely acid-base condition of the patient?

Authors' answer
Respiratory alkalosis over chronic respiratory acidosis with renal compensation.

Feedback:
Mr. Afridi now suffers from an acute respiratory alkalosis induced by over-ventilation. This occurs "over" the pre-existing chronic respiratory with renal compensation.

The level of ventilation should be titrated against the blood pH. Tissues respond poorly to acidotic states and thus one should endeavour to maintain pH within the normal range by monitoring pH levels.

Upon commencement of artificial respiration you note an immediate drop in blood pressure.

Question 7
What is the cause of the drop in BP?

Authors' Answer
Reduced venous return to the heart

Question 8
Mr Afridi says that he found the period of intubation very uncomfortable and distressing. He makes an impassioned plea that if the same situation were to arise again he categorically refuses to be intubated again. Having been told this, and assuming that a similar situation arises, what are your rights and responsibilities regarding the patient's wishes?

Authors' Answer
In some countries under the Medical Treatment Act a patient is under no obligation to receive medical procedures that they have previously objected to and have explicitly requested not to receive. If a medical practitioner applies a medical procedure to a patient, and it can be documented that the patient has requested not to receive such a procedure, the doctor may be charged with assault. You will need to refer to your own National Guidelines

Final history
After Mr. Afridi's harrowing experience his compliance to medication and sticking to his action plan improved. He attended you every 2 months for regular monitoring and 12 months later was still well controlled.

Case study - Pyloric stenosis

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Case study

Ross is the first born, 6 week old male infant of a Caucasian couple. He is bought to you after the mother has become concerned about his vomiting. Ross weighed 3.5kg at birth and 4.0kg at 3 weeks of age. Subsequently the vomiting started, initially in small amounts and occurring after feeds. Lately the vomits have become larger. There is no bile in the vomit. Over the last few days it seems that baby Ross has vomited most of what he has been feeding. The mother has been breast-feeding but tried to supplement with formula cow's milk thinking that there was something wrong with her breast milk. The baby has been quite hungry, despite the vomiting and readily accepts another feed. However, over the last couple of days the baby has been less active and feeding poorly.

Self test

Question 1
Before examining Ross what possible causes come to mind?

Select from the following possibilities the ONE most likely cause.

1. Pyloric stenosis
2. Oesophageal atresia
3. Underlying infection (urinary tract, meningitis).
4. Addisonian crisis
5. Gastro-oesophageal reflux

Authors' Answer is on page 45

Continuing history

On examination, baby Ross appears listless, pulse rate is 180 per min. His weight is 3.7kg. The fontanelle is depressed. The baby feels cold around the hands and feet despite being wrapped appropriately for the weather. You observe some projectile vomiting. You suspect moderate dehydration and volume depletion.

Question 2
Select from the following possible causes the most likely diagnosis

1. Pyloric stenosis
2. Oesophageal atresia
3. Underlying infection
4. Addisonian crisis
5. Gastro-oesophageal reflux

Authors' Answer is on page 45

Question 3
What is the significance of the depressed fontanelle?

Authors' Answer is on page 45

Question 4
What is the significance of the cold hands and feet?

Authors' Answer is on page 45

Continuing history

You order a blood gas examination, serum and urine electrolytes. The results and normal values are as follows:

Test	Result	Normal values
pH:	7.55	(7.35 - 7.45)
pCO2:	55	(31 - 42)
HCO3-	46	(20 - 26)
Serum:		
Sodium	140	(135-145)
Potassium	3.2	(3.5 - 5.0)
Chloride	70	(98 - 110)
Urea	15	(1.5 - 5.0)
Creatinine	0.08	(0.03 - 0.05)
Urine:		
Sodium	25	(15-250)
Chloride	1	(20-250)
Potassium	50	(25-120)
pH	8	(4.6-8.0)

Question 5
What is the acid base disorder?

Authors' Answer is on page 45

Question 6
Why are the urea and creatinine raised?

Authors' Answer is on page 45

Question 7
Why is there hypokalaemia?

Authors' Answer is on page 45

Question 8
What is the significance of the low serum potassium?

Authors' Answer is on page 45

Question 9
What is the significance of the urine pH8?

Authors' Answer is on page 46

Question 10
What is the significance of the low chloride in the urine?

Authors' Answer is on page 46

Continuing history

The history and examination so far suggests to you that Ross has pyloric stenosis.

Question 11
Which area of physical examination will you now do to complete your assessment?

Authors' Answer is on page 46

Continuing history

On palpation of the abdomen you detect the presence of a pyloric tumour. Looking across the abdomen you observe peristalsis.Ultrasound confirms this. You have now made the diagnosis of pyloric stenosis.
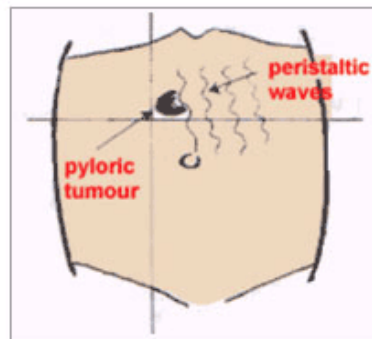
The infant must now be resuscitated in preparation for surgery. Surgery is performed when the electrolytes and acid base abnormalities are corrected. Fluid therapy is instituted to restore body fluids (to stop the secondary hyperaldosteroidism) and to correct the alkalosis (to stop new renal bicarbonate formation occurring).

Question 12
Predominantly, which two electrolytes must be replenished?

Select ONE option only.

1. Sodium and Chloride
2. Potassium and Chloride
3. Sodium and Potassium
4. Magnesium and Chloride

Authors' Answer is on page 46

Question 13
The oral route for rehydration is preferred, at least initially. Select TRUE or FALSE

Authors' Answer is on page 46

Question 14
What volume of fluids should be returned to the infant over a 24 hour period?

200 ml
300 ml
400 ml
600 ml

Authors' Answer is on page 46

Final history

An infusion of 5% dextran/0.45% NaCl/40 mmolar KCl is commenced. Ross's acid-base and body fluid status returns to normal within 24-48 hours of the commencement of fluid replacement. Surgery is successful (Pyloromyotomy) and a biopsy shows pyloric hypertrophy. The child accepts breast milk 2 days later and is soon discharged.

You are sent Ross's discharge summary and you ask the parents to come in for a follow-up visit. On representation to you in the surgery it is important to ensure that the parents' questions and anxieties are addressed before discharging baby Ross.

Answers and feedback

Question 1
Before examining Ross what possible causes come to mind?

Select from the following possibilities the ONE most likely cause.

1. Pyloric stenosis
2. Oesophageal atresia
3. Underlying infection (urinary tract, meningitis).
4. Addisonian crisis
5. Gastro-oesophageal reflux

Author's answer:
Gastro oesophogeal reflux.

Feedback:
Infants presenting to general practitioners with this scenario are most likely to be caused by gastro-oesophageal reflux.

Question 2
Select from the following possible causes the most likely diagnosis.

1. Pyloric stenosis
2. Oesophageal atresia
3. Underlying infection
4. Addisonian crisis
5. Gastro-oesophageal reflux

Author's answer:
Pyloric Stenosis

Question 3
What is the significance of the depressed fontanelle?

Author's answer:
The fontanelle represents the point of incomplete fusion of the skull bones at the apex of an infant's head. As such it is continuous with the cerebrospinal fluid. In states of dehydration and consequent reduction in extracellular fluid volume, there will be a commensurate reduction in cerebrospinal fluid and depression of the usually turgid fontanelle.

Question 4
What is the significance of the cold hands and feet?

Author's answer:
In cases of volume depletion there can be a failure of the peripheral circulation resulting in reduced tissue perfusion and hypothermia of the extremities.

Question 5
What is the acid base disorder?

Author's answer:
This infant has a metabolic alkalosis.

Feedback
This is because the pH is raised (hydrogen ion concentration reduced). The expected respiratory response for a metabolic alkalosis is present (the empirical rule that for every mmol/L rise in the plasma bicarbonate concentration from 25, the $PaCO_2$ should rise by 0.7mmHg from 40 is present).

Question 6
Why are the urea and creatinine raised?

Author's answer:
The clinical picture is one of at least moderate extracellular volume depletion with tachycardia and a sunken fontanelle and loss of 10% of body weight. This is associated with reduced renal perfusion and an increase in the urea and creatinine. The urea is increased proportionately more than the creatinine. This is in keeping with a pre-renal injury.

Question 7
Why is there hypokalaemia?

Authors' answer
The hypokalaemia is secondary to renal loss of potassium (as shown from the urinary electrolytes). The loss of potassium is due to the reduced renal perfusion causing increased release of renin, and sequentially increased angiotensin and aldosterone. This secondary hyperaldosteroidism results in potassium secretion into the distal tubule. The potassium secretion is exacerbated by the presence of an alkaline urine.

Question 8
What is the significance of the low serum potassium?

Authors' answer
Hypokalaemia is one of two potent stimuli to the kidney causing regeneration of bicarbonate (the other is metabolic acidosis). In this case, the generation of new bicarbonate caused by hypokalaemia causes the metabolic alkalosis to persist and is thus deleterious. The correction of the hypokalaemia is thus necessary to get complete resolution of the alkalotic state.

Question 9
What is the significance of the urine pH8?

Authors' answer
A urine pH of 8 indicates there is at least 10mmol/L of bicarbonate in the urine. The bicarbonaturia occurs because the renal threshold for reabsorption of bicarbonate (around 25mmol/L normally) is grossly exceeded here. The bicarbonate must be accompanied by a cation (positive ion) for electro-neutrality. The only two cation's available are sodium and potassium. Thus, even in the presence of extra-cellular depletion there is sodium lost in the urine. As mentioned above, the potassium is high because of the secondary hyperaldosteroidism (which acts to increase potassium loss and decrease sodium loss in the urine).

Question 10
What is the significance of the low chloride in the urine?

Author's answer:
The low urine chloride is an indication that the alkalosis is due to vomiting.

Question 11
Which area of physical examination will you now do to complete your assessment?

Authors' answer
Examine the abdomen.

Question 12
Predominantly, which two electrolytes must be replenished?
Select ONE option only.

1. Sodium and Chloride
2. Potassium and Chloride
3. Sodium and Potassium
4. Magnesium and Chloride

Authors' answer
Sodium and Potassium

Feedback:
The principal deficits are in sodium (due to the volume depletion) and potassium (due to the aldosterone-induced kaliuresis). Thus, an infusion of sodium chloride and potassium chloride is most appropriate.

The oral route for rehydration is preferred, at least initially.

Question 13
The oral route for rehydration is preferred, at least initially.

Select TRUE or FALSE

Authors' Answer
False

Feedback:
The possibility of further vomiting would rule out oral rehydration therapy. Intravenous is preferred.

Question 14
What volume of fluids should be returned to the infant over a 24 hour period?

200 ml
300 ml
400 ml
600 ml

The Authors' answer is:

400 ml

Feedback:
The volume of fluid returned over the 24 hour period must take into account not only the body fluid deficit upon arrival (300 ml) but also;
- insensible fluid loss (skin, lungs)
- urine loss
- vomiting