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Sadržaj / Table of Contents

Effect of a program to strengthen quadriceps femoris spasticity in victims of stroke	
Jose Humberto Azevedo de Freitas Junior. Luis Carlos Carvalho. Kelly Patricia Medeiros Falcao.	
Elisangela Vilar de Assis Ubiraidos de Andrade Isidorio Luciano Miller Reis Rodrigues	
Vitor Engracia Valenti, Thajam Padrozo Campos Antunos, Ankilma do Nascimento Andrada Egitosa	
Vuor Engracia valenii, Indiany I earozo Campos Antanes, Ankuma do Nascimenio Anarade Feliosa,	
Maria do Socorro Cirilo De Sousa	
The psychosocial impact of acne vulgaris on quality of life among youth in Lahore, Pakistan Saira Afzal, Muhammad Arif Khan, Mamoona Mohsin, Sara Mubeen	1217
Characterization of the epidemiological profile of individuals undergoing	1000
Induscrioita physiother apy	······ 1 <i>222</i>
Juliana Regis da Cosia e Oliveira, Marcia B. Cunna, Luiz Curios de Abreu, Fernando Adami, Rodrigo Daminello Raimundo, Vitor Engracia Valenti, Claudio Leone, Marco Akerman	
Koarigo Duminetto Kulmunuo, vitor Engrucia valenti, Claudio Leone, Marco Akerman	
The practice of pharmacy in Iraq	
Inas Rifaat Ibrahim, Mohamed Azmi Ahmad Hassali	
Pharmacological oral conversion of atrial fibrillation with rapid ventricular response in sinus	1235
Regiamin Ferhathegovic Leila Ferhathegovic Food Omerkic Miriana Mandusic	1233
Benjumin I ernaibegovie, Lejta I ernaibegovie, Esca Omerkie, imirjana inanausie	
Assessment of prognostic significance of microvessel density in clear cell renal cell carcinoma	
Fahredin Veselaj, Suzana Manxhuka-Kerliu, Lutfi Dervishi, Labinot Shahini, Liridon Selmani	
Pattern Presentation to Improve the Health Care Quality of Yazd Withdrawal Centers Using	1349
Ibrahim Salmani Abdonnahi Khatihi Abolfazl Nouri Mahmoud Rafizadeh	1240
Nursing care in liver transplantation: case report	
Nilgun Aksoy	
Disparities in Access to Health Care: Case of Iron	1262
Satar Rezaei Mohsen Rarouni Sadeoh Ghazanfari Ali Kazemi Karvani Naseh Hidarnezhad	1202
Behzad Mohammadi	
Instructions for the authors	1270
Insu ucuons for the authors	14/0

Effect of a program to strengthen quadriceps femoris spasticity in victims of stroke

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Abstract

We aimed to analyze the effect of a program of muscle strengthening on spasticity and strength of the quadriceps in patients with stroke sequelae. The sample was composed of 12 individuals in the experimental group (EG) and 6 in the Control Group (CG). Strength and muscle tone were measured using suitable electronic instrumentation and digital polygraph *BioMed* ® software. The EG's programmed activities were carried out with five minutes of warming upon the exercise bike, three sessions of passive stretching, of twenty seconds each, of the quadriceps femoris, ending with the strengthening of the quadriceps muscle, using a Bonnet chair. The building program consisted of ten sessions over a period of three weeks, using a resistance of 50% of one maximum repetition (MR) in the first six sessions and 80% in the last four. At the end of each series an isometric contraction of 10/2was maintained and a rest interval of one minute between the sets. The CG was evaluated over the same periods as the experimental group but without intervention. The RMS value of EMG, in the EG, at rest showed statistically significant differences, between before and after strength training for both the vastus medialis (p = 0.025), and the vastus lateralis (p = 0.025). On the other hand, the CG during rest did not present any statistically significant difference in either of the muscles. The strengthening produced no increase in spasticity.

Key words: Strength, Tone, Training.

Introduction

Daily attempts are made, in physical rehabilitation units, to control muscle tone, particularly the reduction of spastic hypertonia (spacticity) and the increase of muscular strength, in the attempt to improve the quality of life of patients suffering from the sequelae of Cerebrovascular Accidents (CVA).

Spacticity is a motor disturbance characterized by the increase in muscular tone, dependent on the speed of muscular stretching, associated with the exacerbation of the myotactic reflex. Its physiopathology varies in accordance with the origin of the lesion: vias pyramidal and extrapiramidal [1-3]. Dicionário - Ver dicionário detalhado

Muscular strength is another variable, beyond tone, which can be observed in the muscles, and is an important aspect of physical aptitude and state of health, the reduction of which can lead to serious functional limitations [4-6]. This reduction of strength may be found in hypertonic muscles, though this is a controversial opinion, but one is here dealing with a weakened structure such as is perceived in patients after CVA [7, 8].

The reduction of spasticity is one of the objectives of rehabilitation programs in persons suffering from CVA [9]. Among the therapies for the reduction of spasticity is cryotherapy [10, 11], Functional Electrical Stimulation (FES) and Transcutaneous Electrical Stimulation (TENS), stretching techniques and orthosis [12-14]. However, the reduction of spasticity alone does not condition the individual for the activities of daily life, muscular strengthening is also necessary, but without this increasing hypertonia.

Rehabilitation programs for spastic and paretic patients have been undertaken on the basis of muscular strengthening with no increase in spasticity [15, 16]. It thus seems that an ancient fear of rehabilitation professionals is being reduced: that of applying a strengthening program which increases the hypertonia of the muscles.

For the measurement of spasticity and muscular strength it is fundamental that one use a quantitati-

ve and objective strategy such as the biomechanical indicators arising from the analysis of kinetic, kinematic and electromyographic parameters [17, 18]. Superficial electromyography is a method widely used to obtain information on neuro-muscular activity, and is used for the study of electrophysiological aspects of the activity of the muscle and nerve fibers [19]. However, due to its limitations in its correlation with muscular activity, dynamometry is used accurately to measure the muscular strength developed during muscular contractions [20].

This study sought to analyze the effect of a program of muscular strengthening on the spasticity of the femoral quadriceps in victims of stroke.

Method

This is a study of experimental design, longitudinal approach and quantitative analysis. The sample population consisted of 18persons, victims of CVA, patients of the School of Clinical Physiotherapy, located at the Federal University of Paraíba, Brazil. As there were two drop-outs, the sample was divided as follows: 12 members in the Experimental Group (EG) and 6 in the Control Group (CG).

All the participants were assessed at the Laboratory for the Analysis of Human Movement (Laboratório de Análise do Movimento Humano – LAMH), UFPB, where there isa 2-channel electromyogram amplifier, a Bonnet chair equipped to measure the effort made during the extension of the knee and an amplifier connected for the measurement of effort. The patients underwent the procedure for muscular strengthening at the School of Clinical Physiotherapy (Clínica Escola de Fisioterapia) of the UFPB, using Bonnet's chair and rings with weights attached according to the need of each participant.

The participants were submitted to assessment of the degree of spasticity of the quadriceps using Ashton's modified scale [11, 21]. Then the groups carried out the basic assessment (before the application of the training protocol) of the muscular strength of the spastic quadriceps. The patients sitting in Bonnet's chair extended their knee as far as possible against the fixed resistance arm of the chair (figure 1), maintaining the maximum isometric contraction for 6 seconds, the same procedure being repeated twice more with intervals of 90 seconds between them. The preceding procedure also permitted the simultaneous register of the surface EMG of the vastus medialis andvastus lateralis muscles which allowed one to take the basal average of the RMS value and of the EMG at the 3 maximum isometric contractions, as also to measure the RMS value during the phase of complete rest of the muscles, for a period of 10 seconds before beginning the maximum isometric contractions.

After the basal assessment of strength and of the surface EMG, the EG was submitted to the muscular strengthening program for 10 sessions, generally three times a week for three weeks, each session lasting an average of 20 minutes, distributed in three phases. 1st phase: warming-up for five minutes pedaling on the work bike; 2nd phase: three series of passive stretching of the quadriceps muscle, each series lasting twenty seconds, and the 3rd phase: the strengthening of the quadriceps muscle against resistance, the load of which was obtained after the extension of the knee, with the quadriceps at maximum isometric contraction, against the resistance arm of the equipped Bonnet chair, where the strength sensoris found. Fifty percent of the maximum value of the load was used in the first six sessions and from the seventh to the tenth session 80% of the maximum value was used.

Strengthenings of both isotonic and isometric type were used, taking as a model a protocol [22] adapted for chronic hemiplegic individuals. The protocol consists of: the individual seated in an extending chair, undertaking three series of ten repetitions of the affected member and, after these series, one series of 10 repetitions of the healthy member and a new series of 10 repetitions of the affected member, after which the individual was stimulated to extend his knee fully. The isometric exercise was performed at the end of each series of isotonic exercises, with the knee extended at 120° for 10 seconds, supporting strength, at the same angle used for the assessment of strength. The interval between the series was of one minute. The CG did not suffer any intervention, simply the assessment of the tone, strength and RMS values of the EMG, being advised not to undertake activities of resisted strengthening. Spasticity was assessed, as well as strength and RMS values of the EMG, using the same method as applied to the EG, during the same period of time to which the EG was submitted [23].

During the processing of the signs of strength, both for the register of the basal activity as also for those obtained after the training in the experimental and control groups, the strength achieved in each of the three isometric contractions was measured and taken, for the analysis of the data, as the maximum force obtained among the three contractions.



Figure 1. Bonnet's chair used during the recording of the signs of strength and electromyogram, showing the patient's position

The statistical processing of the data was undertaken using the app SPSS 16.0. First, the Shapiro-Wilk test was applied to ascertain whether the data presented normal distribution. Levene's test was then used to determine the homogeneity of the variations. For the data that presented normal distribution and homogeneous variations, Student's paired t test was used to compare the averages of the variables before and after the treatment. For the data that did not present normal distribution, Wilcoxon's non-parametric test was utilized. The study was approved by the Research Ethics Committee (protocol no. 365/11)

Results

The descriptive statistics of the experimental group may be seen in Table 1.One may compare the values of the variables measured before and after the three-week training period.

The descriptive statistics of the control group may be seen in Table 2. One may compare the values of the variables measured before and after the three-week training period.

Table 3 shows that the muscular strengthening program of the quadriceps did not increase the spasticity of the vastus medialismuscle of the experimental group during rest.

Table 4 shows that the program for the muscular strengthening of the quadriceps did not increase the spasticity of the vastus lateralis muscle of the experimental group during rest.

	Ν	Minimum	Maximum	Average	Standard Deviation
Strength 1	12	1.80	44.80	18.52	14.07
Strength 2	12	2.60	39.10	19.23	11.52
RMSr1VM	12	14.50	26.10	19.40	3.46
RMSr2VM	12	9.30	28.90	15.80	5.79
RMSm1VM	12	39.00	214.00	109.42	61.61
RMSm2VM	12	27.00	265.00	118.42	61.61
RMSr1VL	12	12.80	78.80	26.20	18.29
RMSr2VL	12	5.80	38.20	17.82	8.84
RMSm1VL	12	54.00	375.00	191.67	106.84
RMSm2VL	11	75.00	606.00	234.00	169.86

Table 1. Descriptive statistics of the experimental group

Legend: Strength 1 = value of the pre-physical program strength of thevastus medialis (in Kgf), Strength 2 = value of the post physical program strength of thevastus medialis (in Kgf), RMSr1VM = RMS rest pre-physical program of thevastus medialis (in μV), RMSr2VM = RMS rest post-physical program of thevastus medialis (in μV), RMSr1VM = RMS maximum pre-physical program of thevastus medialis (in μV), RMSr1VL = RMS rest post-physical program of thevastus medialis (in μV), RMSr1VL = RMS rest pre-physical program of thevastus medialis (in μV), RMSr1VL = RMS rest pre-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest post-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest post-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest post-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest post-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest post-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest post-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest post-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest post-physical program of the vastus lateralis (in μV), RMSr2VL = RMS maximum pre-physical program of the vastus lateralis (in μV).

	N	Minimum	Maximum	Average	Standard deviation
Strength 1	6	3.60	51.80	18.52	17.42
Strength 2	6	2.50	44.80	16.92	15.58
RMSr1VM	6	10.60	20.40	16.13	4.01
RMSr2VM	6	14.50	22.00	18.55	3.03
RMSm1VM	6	58.00	129.00	92.00	27.74
RMSm2VM	6	40.00	394.00	139.83	130.64
RMSr1VL	6	9.32	19.20	15.15	3.40
RMSr2VL	6	12.80	24.50	19.62	4.16
RMSm1VL	6	83.00	271.00	173.83	74.04
RMSm2VL	6	40.00	394.00	169.50	126.63

Table 2. Descriptive statistics of the control group

Legend: Strength 1 = value of the pre-physical program strength of the vastus medialis (in Kgf), Strength 2 = value of the post physical program strength of the vastus medialis (in Kgf), RMSr1VM = RMS rest pre-physical program of the vastus medialis (in μV), RMSr2VM = RMS rest post-physical program of the vastus medialis (in μV), RMSr1VM = RMS maximum pre-physical program of the vastus medialis (in μV), RMSr1VL = RMS rest post-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest pre-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest pre-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest post-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest pre-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest pre-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest pre-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest pre-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest pre-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest pre-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest pre-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest pre-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest pre-physical program of the vastus lateralis (in μV), RMSr2VL = RMS rest pre-physical program of the vastus lateralis (in μV).

Table 3. Results of Wilcoxon's test (experimental group) and of Student's t test (control group) of the variable RMS of the EMG during the rest of thevastus medialis muscle.

Group	RMSr 1	RMSr 2	Value-p
Experimental	19,400	15,791	0.025*
Control	16,133	18,550	0.337

Legend: RMSr1 = RMS value of the EMG of rest before the training in microvolts, RMSr2 = RMS value of the EMG of posttraining rest in microvolts.*Statistically significant difference.

Table 4. Wilcoxon's test (experimental group) and Student's t test (control group) for the paired samples of the variable RMS of the EMG during the rest of the vastus lateralis muscle.

Group	Average RMSr 1	Average RMSr 2	Value-p
Experimental	26,200	17,816	0.025*
Control	15,153	19,616	0.138

Discussion

There was no statistically significant difference in the comparison of the averages of the strengths before and after the procedures applied to the experimental and control groups. This diverges from the result of the study of Bale M &Strand LI²⁴who found a statistically significant difference between victims of CVA who took part in strength training and those who did not. These data were collected after a review of 8 research studies which applied protocols for the muscular strengthening of the quadriceps, with sessions between 2 and 5 times a week and series with low frequencies, less than 12 times, a method similar to that presented here.

Various factors may have contributed to our findings: the duration of the strengthening pro-

gram adopted, which varied from 2 to 4 weeks, whereas that of Bale M & Strand LI [24] lasted for between 4 and 12 weeks, depending on the regularity of the individual. The reduction in the number of weeks worked implies a smaller number of sessions by the end of the program, which might have produced a lesser strengthening, this reasoning being ratified by the studies of Ryan AS *at al* [25], Jørgensen JR *et al* [26].

Thus also, in the study of Cooke EV *et al* [27], a significant statistical difference is observed when individuals suffering from CVA have their soleus muscles exposed to a strengthening program and were compared to a group without this activity. Once again we find the majority of individuals of the experimental group presenting

increases in strength by the end of the program, differently from our research and that of Bale M &Strand LI [24]. Again it appears that the number of sessions influences the result, for the program lasted 8 weeks with 3 weekly sessions of an average duration of 30 minutes each. Despite the two strengthening programs being alike as regards the warming up, stretching, load limit and frequency of the repetitions, it seems that the number of sessions which in this case was of about 24, resulted in this difference in the final results.

Beyond the number of weeks and sessions of the strengthening program, another variable which may have led to the absence of any statistically significant difference in our study, both for the experimental group and for the control group, is the non-homogeneity of the sample. We had an age range of between 24 and 85 years, although all presented similar diagnosis, sequel and neural plasticity, according to Feldman DE [28] and Yeatman JD & Feldman HM [29], the musculature does not have the same characteristics in individuals of different ages. This heterogeneity of age is not to be observed in the studies of Lodha N [30], in which samples of less than 12 individuals with age differences of 21 years at the most, all with lesions in the central nervous system, underwent a muscle strengthening program 2 to 3 times a week for from 6 to 10 weeks. At the end of it, an increase in muscular strength and other elements of the performance of movement was discovered by means of the dynamometer; though the absence of any increase in spasticity in any of the individuals concerned was noteworthy.

Beyond the various studies on muscular strengthening, whether isotonic or isometric, presenting positive results as to gain in strength, in the same way as our study and the studies of Lodha Net al [30], Aubry Jet al [31] using isokinetic muscular contractions also ratify it, as well as attesting to its trustworthiness. The benefits of these protocols to sufferers of CVA and other lesions of the central nervous system corroborate the findings of this study. Even isocinetic activity, if it follows the same principles of strengthening distinct from isotonic activity (concentric and excentric) and isometric, used in our study, will evidently, regardless of the modality, produce strengthening in the musculature affected and weakened by the diseases of the central nervous system, if it is exposed to well-prepared, monitored and validated programs. Thus these strengthening programs will achieve their objective with no damage to muscular tonus, that is to say, without any increase in spasticity.

Muscular strengthening may be applied to the sufferer from CVA, using various protocols, as may be observed in the systematic survey of Hedlund et al [32] with their meta-analysis of randomized studies. An analysis of 21 studies presented various programs and different techniques employed to obtain muscular strengthening in sufferers from CVA, among them being electrical stimulation, biofeedback, muscular re-education, the exercise of progressive resistance and conventional therapy. Individuals of between 50 and 70 years of age underwent strengthening programs of an average duration of 6 weeks. Both acute and chronic cases were treated three times a week on average, corroborating the work here presented, as the increase in muscular strength with no increase in spasticity was constantly observed throughout this systematic review. These results confirm the idea that muscular strengthening in patients suffering from CVA is beneficial to the good functioning of the corporal segment.

The activation of motor units may be observed by means of the RMS value of the surface EMG as in the studies of Diefenthaeler [33]. The information may be used to assess the degree of muscular activation, as in the study of Sorinola *et* al [34], which sought to observe the influence of the position of the body on the spasticity of the femoral quadriceps in 19 individuals with spastic hemiparesis. It is perceived by means of the measurement of the RMS value of the surface EMG, whether in movement or repose, that the supine position provokes greater spasticity than the seated, there being a significant statistical difference.

Thus, the RMS value of the EMG can be an excellent indicator of the degree of spastic hypertonicity of the muscle. The greater the RMS value at rest the greater the hypertonicity presented by the patient. These results corroborate the data found in this present study. The RMS values at rest of the experimental group, whether of the vastus medialis muscle or of the vastus lateralis muscle presented a reduction in the RMS value after the application of the treatment, with a significant statistical difference (p=0.025). This suggests that the muscular training, as well as promoting an increase in the strength for the experimental group, also promoted a significant reduction in the degree of muscular hypertonicity in both the muscles studied.

The control group, on the other hand, beyond presenting a reduction in muscular strength, presented an increase in the RMS value at rest in both the muscles, although this difference was not statistically significant, which suggests a worsening of the degree of muscular hypertonicity. For the variable RMSr, therefore, we reject the null hypothesis and accept the alternative hypothesis that a program of muscular strengthening does not increase spasticity.

The results quoted above corroborate those obtained in the work of Scholtes VA [35] Gray[36],whose objective was to analyze the influence of physical training on spasticity. Children, adolescents and adults with spasticity underwent programs of muscular strengthening lasting between 6 and 12 weeks. These persons were given isotonic, isometric and resistance contraction exercises of their quadriceps musculature. The results showed that tonicity was reduced or remained unaltered after physical training. These data reinforce the theory that the activity of muscular strengthening does not increase spasticity, and may even contribute to its reduction.

As was observed in the study of Clark & Patten [37] and Prado-Medeiros et al [38] whose objective was the analysis of the damage caused by the production of strength in 17 hemipareticpost-CVA patientsin a group of an average 57.5 years of age, a reduction in the strength of the quadriceps and femoral biceps muscles resulted from the use of dynamometry. There was also a reduction in the RMS value of the EMG in both muscles during muscular contraction when compared to the values for normal muscles. Both variables presented a statistically significant difference. These observations ratify the data given in our study, as one perceives in the majority of the patients of the experimental group, both in the vastus medialis as in the vastus lateralis, a reduction in the RMS values of the EMG, in maximum isometric contraction, before training. These values increased after muscular training, despite there not being in this study any statistically significant difference.

During the project, there was an increase in the average RMS value in the maximum isometric contractions for the experimental group in both muscles, the vastus medialis and the lateralis, while in the control group there was an increase only in the vastus medialis, but these results did not present any statistically significant differences. It is worthy of note that the amplitude of the EMG is critically dependent on the position in which the electrodes are placed on the muscle. So care was taken to place the electrodes at the same sites, as by the localization of the point by means of the goniometer. Apart from that, to obtain maximum isometric contractions from these patients by means of strong verbal commands is much more difficult than in healthy individuals. Even so, the experimental group presented an increase in the average RMS value for both muscles, though without any statistical difference.

On the basis of the above data obtained in our research, the benefits of the muscular strengthening of spastic muscles are once again clear. The increase in the RMS value of the EMG during maximum isometric contraction means a greater recruitment of the nerve and muscle fibers, which favors the better functioning of the myo-skeletal and articular structures. On the other hand, the reduction of the RMS value of the EMG during rest, after the physical training, shows that the relationship between exercise and spasticity is not harmful to tonicity, but, rather, promotes the inhibition of the hypertonicity.Similar conclusions were found in the work of Lee MJ *et* al [39].

Conclusion

It is observed that the program of muscular training, supported by strengthening, did not harm the physical performance of the individuals, and may be suggested for the therapeutic treatment of patients suffering from CVA, even when there is spasticity. It can lead to an improvement in the performance not only of muscular functionality but also in that of the joints, coordination and balance, thus improving quality of life. Due to the controversies on the subject, the discussion does not end here, further study being required, with diverse materials and methods, to make it possible better to understand the phenomena involved, necessary for the planning of more efficacious and productive strategies for those that need them.

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The psychosocial impact of acne vulgaris on quality of life among youth in Lahore, Pakistan

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Abstract

Background and Objective: Acne vulgaris is a common disease in which red scales, white heads, black heads, pimples and sometimes scarring occurs on skin. Quality of life indicates physical, mental and social well-being of a person. Our objective was to determine the psychosocial impact of acne vulgaris on quality of life among youth.

Methods: A cross-sectional study was conducted. A total of 100 subjects were recruited in study using convenient sampling. Selection was made on laid down criteria after taking due consent. Interviews were conducted through a pretested questionnaire. Dermatology Life Quality Index and Global Acne Grading System were used to measure effect on quality of life and severity of acne, respectively. Data were collected, compiled and analyzed through SPSS version 20.

Results: Out of 100 subjects, 73 were female and 27 were male. Majority of subjects belonged to age group 20-40 years (56%), was un-married (67%), had education above matric (70%), had outdoor occupation (61%), lived in urban area (97%) and belonged to middle class (74%). Subjects presented with wide range of duration of illness. According to GAGS, 55% subjects had very severe acne. According to DLQI acne vulgaris had small effect, moderate effect, large effect and very large effect on 5%, 46%, 44% and 5% subjects respectively. Detailed analysis showed that the most common psychosocial effects were embarrassment (81%), self-consciousness (89%), decreased social activities (73%), poor relationship with friends (61%), effect on choice of clothes (59%), and bad performance at school or work (49%). Regarding treatment, most common problem reported was wastage of time (66%). Among physical symptoms, itchy skin was most common (80%)

Conclusion: This study showed that considerable physical, social and psychological morbidity is associated with acne vulgaris. Therefore along with dermatologic treatment, proper attention should be given to psychological support of patients suffering from this disease so that overall quality of life can be improved.

Key words: Acne, Dermatology, Psychosocial, Quality of life.

Introduction

Acne vulgaris is a common disease in which white heads, black heads, pimples and sometimes scarring occur on skin. It is more commonly seen on face, upper chest and back.¹ Quality of life indicates physical, mental and social well-being of a person.²In health department, quality of life is an important concept as it helps in determining ways to make patients' life better.

More than half century ago psychological effects of acne vulgaris were reported by Sulzberger and Zaidens.³ More recent studies show that acne vulgaris can cause depression and anxiety.^{4,5}It can also lead to low self-esteem and social withdrawal.^{6,7} It also causes considerable physical discomfort.8 Suicidal ideation has also been shown in patients with disfiguring diseases like acne vulgaris.9 In addition to psychological burden, acne vulgaris has been reported to cause poor interpersonal relationships.¹⁰Some studies have shown that male patients of acne are psychologically more affected and some report females being more affected.^{11,12} Equal effects on both sexes have also been reported.13 Studies show that elder patients are more prone to be psychologically affected due to acne.14 Increased effect on quality of life has also been linked to severity of acne.¹⁴

Therefore it is strongly required to conduct this study so that actions can be taken to improve quality of life of people suffering from acne vulgaris.

Methods

A cross-sectional study was carried out in the department of dermatology, Mayo hospital, Lahore to determine the impact of acne vulgaris on quality of life. Study population comprised of 100 subjects recruited through convenient sampling. Sample included male and female people, of age 12-60 years, who had been suffering from acne vulgaris for at least 2 months. Un-willing, non-co-operative people and those with preexistingpsychiatric morbidity were not included. Prior consent was obtained from all selected study subjects. Subjects were interviewed through a pre tested questionnaire. Dermatology Life Quality Index and Global Ace Grading System were used to measure effect on quality of life of patients and severity of acne, respectively. Social and ethical considerations were observed. Data was compiled and analyzed by SPSS version 20.

Operational definitions:

A) Severity of acne: according to score of Global Acne Grading System (GAGS).

- 1. Mild acne: score 1-18
- 2. Moderate acne: score 19-30
- 3. Severe acne: score 31-38
- 4. very severe acne: score>39

Table 1.

B) Effect on quality of life: according to score of Dermatology Life Quality Index.

- 1. No effect: Score 0-1
- 2. Small effect: Score 2-5
- 3. Moderate effect: Score 6-10
- 4. Large effect: Score 11-20
- 5. Very large effect: Score 21-30

Results

Out of 100 subjects, 73 were female and 27 were male. Majority belonged to age group 20-40 years (56%). Majority of subjects were un-married (67%), had education above matric (70%), had outdoor occupation (61%), lived in urban area (97%) and belonged to middle class (74%). Subjects presented with wide range of duration of illness. According to GAGS, 55% subjects had very severe acne. According to DLQI acne vulgaris had small effect, moderate effect, large effect and very large effect on 5%, 46%, 44% and 5% subjects respectively. Detailed analysis of various effects showed that most common problems were regarding feelings i.e. embarrassment (81%) and selfconsciousness (89%). Among physical symptoms, itchy skin was most common (80%). Regarding

Aspects of life being affected due to acne	No. of subjects	Percentage of subjects
Itchy skin	80	80%
Sore skin	74	74%
Painful skin	76	76%
Stinging skin	71	71%
Embarrassment	81	81%
self-consciousness	89	89%
Tendency to avoid shopping	48	48%
Difficulty in looking after home	31	31%
Effect on choice of clothes	59	59%
Decreased social activities	73	73%
effect on leisure activities	47	47%
Decreased participation in sports	35	35%
Bad performance at work or school	41	41%
Poor relationship with life partner	25	25%
Poor relationship with friends	61	61%
Poor relationship with relatives	52	52%
Difficulty in sexual relationship	19	19%
Treatment messes up home	42	42%
Treatment messes up clothes	52	52%
Treatment wastes time	66	66%

daily activities, effect on choice of clothes was reported by 59% subjects and bad performance at school or work by 49%.Decreased social activities were reported by 73% subjects and most affected relationship turned out to be with friends (61%). Regarding treatment, most common problem reported was wastage of time (66%).





b) Acne affected social activities





d) Severity of acne according to GAGS Figure 1.

Discussion

Acne vulgaris is a common disease which affects many aspects of life in addition to affecting skin. This topic was selected because patients suffering from acne vulgaris face considerable psychological, social and somatic distress. However, psychosocial effects of acne vulgaris are often not fully appreciated. Therefore there was a due need to conduct a research to find out the magnitude of various effects so that the quality of life of patients can be improved.

Regarding overall DLQI results, this study showed that acne vulgaris had moderate to large effect in majority of subjects which is in accordance with a study conducted in Iran.¹⁵ Detailed analysis of DLQI showed that most common problems were regarding feelings i.e. embarrassment and self-consciousness which is in accordance with a similar study conducted in Thailand.¹⁶Similar to this study, above mentioned study revealed that decreased social activities, physical symptoms and problems regarding treatment most significantly affect quality of life and least effect was observed for difficulty in sexual relationship.

In this study, self-consciousness was the biggest effect reported (89%). Many previous studies have focused on effect of acne vulgaris on feelings and these studies consistently show emotional morbidity in terms of embarrassment, low self-esteem and self-consciousness.¹⁷

In present study complaints related to physical symptoms were on second number. Subjects were

questioned for itch, soreness, pain and stinging and majority complained of these with itch being most common (80%).

Third major effect in present study turned out to be decreased social activities (73%). Many subjects showed tendency to avoid gatherings and to stay isolated. Social withdrawal again, is in accordance with other studies.⁷

A lesser but significant proportion of people (66%) reported that treatment is troublesome because it wastes time. As mentioned before, this finding was one of the topmost in a research conducted in Thailand.¹⁶ In this study, subjects complained that a lot of time was wasted in going for consultation.

In various studies, there is quite a lot of emphasis on acne vulgaris leading to poor interpersonal relationships.^{10,17} Subjects were questioned for relationship with friends, relatives and life partner. Most severely affected relationship turned out to be with friends (61%). Majority of subjects associated this with self-consciousness and sense of embarrassment. In another study, 40% subjects reported poor interpersonal relationships.⁸

In this study, next significant finding was effect on choice of clothes (59%). This effect has not been reported much in other studies. It is because many women showed a tendency to cover their faces with veil to hide their "pimples".

A study shows strong correlation between acne vulgaris and poor performance at school or work (64%).⁸Apparently in this study only 49% subjects complained of this. However if we consider that 39% of our subjects stayed indoor then it shows that 80% of subjects who went to school or work, reported poor performance. So this is in accordance with other studies.¹⁷

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Characterization of the epidemiological profile of individuals undergoing household physiotherapy

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Abstract

Background. The modality of health care in the home environment aims to promote, maintain and / or restore the health of the patient to be cared for, seeking to re-establish mainly functional independence and autonomy within the home.

Objective. To describe the epidemiological profile of users of home physiotherapy.

Method. The case-notes of 271 patients between May 2009 and December 2011 were analyzed and the variables age, sex, marital status, education, initial medical diagnosis, functional dependence, treatment prognosis (death, discharge, admission or remains in physiotherapy), time and type of physiotherapy, recorded.

Results. The users were 52.7 % women, aged 70-79 years, widowed (39.1%), predominantly with incomplete primary education (42%). As regards clinical diagnosis, 46.4% were victims of Cerebral Vascular Accident (CVA), regarding degree of functional dependence, 77% were bedridden, concerning treatment prognosis, 40.9% were removed to hospital, home treatment time ranging from one to ten weeks and physiotherapy was the most prevalent with 50.5%.

Conclusion. The home care cases were characterized by chronic diseases, were aged 70 to 79 years, mostly women, widows with incomplete primary education; the main focus of the home physical therapy being motor rehabilitation, with treatment of patients with sequelae of CVA.

Key words: epidemiological profile, physiotherapy, home care.

Introduction

The modality of health assistance in the home environment has as its objective the promotion, maintenance and/or restoration of the health of the patient to be attended, with a view primarily to the reestablishment of his functional independence and autonomy in the home. In the light of this concept, the conventional hospital structure is applied in the residence of the patient who is attended by a multidisciplinary team with total safety and comfort¹.

One of the members of the multidisciplinary team is the physiotherapist who is responsible for the physiotherapeutic and social interventions rendered to the family being attended with a view to their greater participation in the attention given to this patient^{2,3}.

This household physiotherapy permits the practice of motor/functional rehabilitation and the giving of guidance to the caregiver under the supervision of a qualified professional⁴. These household therapies permit the introduction of this professional into the family environment providing, beyond the care related to the disease itself, a broader vision as regards the threats to health involved in such a way as to improve the adaptation to the real situation in this moment of fragile health⁵.

This professional has, further, sought to help the person concerned in an ever more scientific and independent way, by means of research capable of organizing and planning his practice both in new situations and in others which have in practice rendered important results^{2, 3.}

The characterization of the profile of the patients thus attended in their homes is one of these research projects capable of guiding such assistance, making it possible to construct such health practices in a more precise and organized way⁶.

Of primordial concern is the need to get to know the population thus assisted to determine, plan, schedule, train and assess their progress and the actions of health practice applied. Among the advantages achieved one may, further, include the possibility of controlling not only the priority of the direct and indirect care given, but also the number of specialized personnel attending to the patient's needs⁷⁻⁹.

The objective of this study is, thus, to describe the epidemiological profile of the users of household physiotherapy.

Methods

This is a descriptive, quantitative study, conducted at the Home Attendance Service in Sao Paulo/Brazil during the period from May 2009 to December 2011. This research project was approved by the Research Ethics Committee of the School of Medicine of the ABC of the Instituição Fundação do ABC, under protocol no. 96.111/2013.

It consists of a program addressed to people with some degree of physical incapacity, that is to say, to people who would have difficulty in attending an outpatient clinic. The Physiotherapy Sector of the SAD undertakes respiratory physiotherapy and advises patients with regard to kynesiological physiotherapy or motor physiotherapy, making possible an improvement in their quality of life, reducing the number of hospital admissions and greater complications to the health of the patient.

The collection of the patients' data was undertaken by means of the analysis of their case-notes filed at the SAD of São Bernardo do Campo. The sample population consisted of 271 patients (with no sampling loss), of both sexes, who had received or were receiving household physiotherapy treatment, by medical prescription, in the period from May, 2009 to December 2011. Information on the following socio-demographic variables was registered: age, sex, marital status, schooling; clinical information: principal medical diagnosis, degree of functional dependence, prognosis of treatment - if there had occurred death, cessation of treatment, hospital admission or if they continued under physiotherapy follow-up; regarding treatment: duration and type of treatment: whether

the patients received only motor physiotherapy, or only respiratory physiotherapy, or if they underwent both motor and respiratory treatment.

- a) Age, Sex, Marital status, Schooling, Type of Treatment: data extracted from casenotes at the beginning of treatment.
- c) Major Medical Diagnosis: datum extracted from case-notes of the patients in accordance with the International Classification of Diseases – 10th edition (CID-10)¹⁰ as determined by the SAD doctor. The larger part of the case-notes registered more than one diagnosis due to the presence of co-morbidities. Only the principal diagnosis was considered.
- Degree of dependence: the Functional e) Scale of the Red Cross was used for the classification of the degree of dependence of the patients when their condition was assessed on the occasion of the initial physiotherapeutic examination. This scale ranges from 0 to 5, the 0 representing: Totally independent, can walk normally; 1: Undertakes daily activities (DAs) sufficiently well, though has some difficulty in getting around; 2: Presents some difficulties in his DAs, needing some occasional support (walkingstick and walker); 3: Presents serious difficulties with his DAs, needing support in almost all of them. Walks with great difficulty; 4: Impossible to undertake any DA without help. Capable of walking with extreme difficulty when helped by at least two people; 5: Immobile in bed or on sofa. Needs continual care.
- f) Treatment Prognosis: datum extracted from case-notes representing the condition of the patient on the occasion of the data collection: death, return home; hospital admission during physiotherapeutic followup or whether still being followed-up.
- g) Length of treatment: datum extracted from case-notes as part of the physiotherapeutic assessment and from the sheet on progress made. For the collection of this datum, the date of initial assessment was noted and that of the last consultation, and the lapse of time was calculated in weeks. The

patients were then classified in 5 groups, i.e., of 1-10/11-20/21-30/31-40 and 41-50 weeks, for ease of reference.

 h) Type of Treatment – Datum extracted from the physiotherapeutic assessment section of the case-notes. This datum records the type of physiotherapeutic treatment recorded on the date of the beginning of treatment, whether the patient underwent only motor, only respiratory, or both motor and respiratory physiotherapy.

The data were analyzed using *Stata* version 11.0 software and were described in terms of absolute and relative frequency and in terms of measurements of central and dispersive tendency.

The test of the normality of the data used was that of Shapiro-Wilk and the association between variables was established using the Chi-squared test.

Results

The case-notes of 271 patients of the SAD of São Bernardo do Campo relating to the period from 2009 to 2011 were analyzed, the patients' ages range varying from 0 to 100 years. The patients were divided into groups according to age, sex, schooling, marital status, degree of dependence, pathology, kind of physiotherapy applied, treatment prognosis – period of progress made by patient, then length of treatment at the SAD/Physiotherapy, as set out in Table 1.

As regards sex, the majority were women (52.7%) (Table 1).

Concerning age, the majority were concentrated within the age range of 60 - 89 years (70-79 = 27.3%; 80-89 = 22.8%; 60-69 = 19.5%), totaling 69.6%, showing that the group which most uses the SAD is the elderly population of above 60 years of age (Table 1).

Regarding marital status the majority were widows (39.1%), followed by married and single people (33.5% and 16.2%, respectively) (Table 1).

The prevalence as regards schooling was concentrated in the population with a low level of instruction - incomplete fundamental teaching (42%), no schooling (38%) and complete fundamental teaching (10.3%), giving a total of 90.3% of the individuals studied (Table 1).

Table 1.	Socioden	nograp	hic charact	eristics of	the
patients	attended	by the	physiother	apy sector	r of
the SAD					

Characteristics	Ν	%
Sex		
Masculine	128	47.2
Feminine	143	52.7
Age Group		
0-4	5	1.8
5 - 9	2	0.7
10 - 19	1	0.3
20 - 29	8	2.9
30 - 39	9	3.3
40 - 49	10	3.6
50 - 59	28	10.3
60 - 69	53	19.5
70 - 79	74	27.3
80 - 89	62	27.8
90 - 99	18	66
100	1	1.8
Marital status	1	1.0
Single	11	162
Married	01	10.2
Stable union	91 5	33.3
Stable union) 100	1.8
widowed	106	39.1
Separated	25	9.2
Schooling	100	• • •
None	103	38.0
Fundamental incomplete	114	42.0
Fundamental complete	28	10.3
Intermediate incomplete	6	2.2
Intermediate complete	13	4.8
Higher/technical	7	2.5
Clinical diagnosis		
Diseases of the Cent. Nervous System-CVA	126	46.4
Diseases of the Cen. Nervous System-others	72	26.5
Respiratory diseases	19	7.0
Cardiac diseases	5	1.8
Fractures	15	5.5
Neoplasms	20	7.3
Unspecified diseases	14	5.1
Degree of dependence		
Degree 0	2	0.7
Degree 1	12	4.4
Degree 2	9	3.3
Degree 3	28	10.3
Degree 4	10	3.6
Degree 5	210	77.0
Treatment prognosis	_	
Death	56	20.6
Hospital admission	111	40.9
Terminated treatment	91	33.5
Continue under treatment	77	28.4
Length of Treatment (weeks)	, ,	20.1
1 - 10	184	67.8
11 - 20	57	21.0
21 - 30	$\frac{37}{24}$	21.0 Q Q
31 - 40	Δ 4 Λ	0.0
41 - 50	$\begin{vmatrix} 1 \\ 2 \end{vmatrix}$	07
JU - JU	4	U./

The major medical diagnosis given in the casenotes as the main cause of the referral, of the individuals studied, for household physiotherapy was CVA (46.4%), followed by other diseases of the Central Nervous System (26.5%), neoplasms (7.3%); fractures in general (5.5%), and undefined (5.1%) (Table 1).

In relation to the degree of functional dependence, the great majority of the patients who received physiotherapy were bed-ridden (77.0%) (Table 1).

As for treatment prognosis – progress made – of the patients who underwent household physiotherapy, 40.9% of them returned to hospital, 33.5% of them terminated their physiotherapy within the period of the study and 28.4% were still being attended to 20.6% died (Table 1).

As regards the length of the physiotherapy undergone, it was found that 67.8% of the patients had a short period of treatment (1 to 10 weeks), followed by 21% (11 to 20 weeks) and 8.8% (21-30 weeks) (Table 1).

Table 2 shows that in the majority of cases treatment is of motor physiotherapy (50.5%), followed by respiratory physiotherapy (25%).

 Table 2. Distribution of patients attended by the physiotherapy sector of SAD by type of treatment

Type of physiotherapy treatment received by the patients attended		n	%
Motor physiotherapy		137	50.5
Respiratory physiotherapy		68	25.0
Both motor and respiratory p	physiotherapy	66	24.3

Discussion

Health care involves the diagnosis, prevention and treatment of the diseases found among the population. These services are undertaken by the local, state or national health system, by means of multiprofessional teams. The quality of public health thus depends on the right decision to be taken with regard to the environment which determines the state of health of a population, as well as the measures for prevention. So the knowledge of the population studied is of extreme importance for the elaboration of measures of health policy¹¹.

The results of this present study are similar to those found in the literature, outstanding among them being the predominance of the elderly, those in the group of from 60 - 89 years (70-79 = 27.3%; 80-89 = 22.8%; 60-69 = 19.5%) accounting for 69.6% of the individuals studied. In the study of Benassi et al¹² (2012), the profile of the patients undergoing physiotherapy in São Paulo was analyzed, the data being similar to those of this present study, the prevalence of the elderly age group, of those between 61 and 90 years, demonstrating that the elderly population is that which most uses the service of household physiotherapy¹².

This can be explained in the light of the fact that at 60 years of age, the age considered to mark the beginning of old age in developing countries by the World Health Organization¹³, begin the great physiological changes due to aging, including degenerative changes of the body and a greater probability of contracting diseases which tend to be protracted. This phase is characterized by longer periods of disability and death, and human development in this period is considered to be highly complex¹⁴.

The fact that the majority is considered elderly is also due to the increase in life expectancy. In Brazil there occurred, between the 1960s and today, an increase of approximately 500% in this population, i.e., of from 3 millions to more than 14 millions in slightly over 40 years^{15,16}. This points to the aging of the population shown by the reduction in the fertility rate to below the level of population replacement (2.1 children per woman); the rate fell from 5.8 children in 1970 to 2.3 children per woman in 2000 and 1.90 children in 2010¹⁷.

As regards sex, in this study there was a predominance of the female sex - which represented 52.7% of the population studied. With regard to the percentage of the population of the country, there is a predominance of women in the total population: for each 100 women there are 96.93 men, that is to say, there is an excess of 2,647,140 women in relation to the total number of men¹⁸.

Another fact which may explain this predominance is the significant loss of muscular strength (MS) and the consequent reduction in the muscular function, thus increasing the loss of mineral bone density and the number of falls and bone fractures. There also occurs a reduction in the cross-sectional area of the muscles and consequent muscular atrophy, loss of muscular fiber, alteration in the percentage of contractile muscle tissue and a deficit of muscular innervation, including the recruitment and discharge of motor units, which are the main causes of the reduction in MS found in the elderly population. Further, there are the hormonal disturbances which occur after the menopause and which lead to a more rapid bone loss in comparison to that of men. These alterations, which occur more markedly in women than in men, tend to translate into longer permanence in bed and greater complications in the general picture, requiring more physiotherapy^{19,20}.

When marital status is analyzed, it is found that 39.1% are widowed. There is a great difference in the population as regards sex. It is known that more men are born than women and that among young people and adults, there are also more men. However, masculine mortality is higher at all ages, which means that the percentage of women increases with age²⁰. The difference in life expectancy is greater than six years, due mainly to the violence in the great Brazilian urban centers^{20,21}.

In the study of Bastos²², when calculating the profile of patients receiving assistance in **São Paulo**, he found that 59.09% of the patients were widowed, that is to say, more than half the population studied, 27.27% were married and 13.64% single. In the study of Alencar et al ²³, when describing the profile of patients attended by the physiotherapy sector, they also discovered a prevalence of widowed people of 40.5%, 26.2% being married and 19.0% single, similar to the sequence found in this present study.

In this study, as regards schooling, 42% of the population was found to have incomplete fundamental schooling, however, if added to those who had no schooling at all (38%), one arrives at a total of 80% of the patients with a low level of instruction. It is believed that from the 1930s until at least the 1950s, fundamental teaching was still restricted to specific social segments. Thus the low average level of schooling revealed by our research reflects that unequal access²⁴.

In accordance with the study of Alencar et al ²³, as regards schooling, 40.5% had incomplete primary education, 16.7% had completed their primary education and 7.1% were illiterate. Thus a low level of schooling predominated in this research.

In the case-notes remitted for the undertaking of physiotherapy, the principal medical diagnosis is of CVA (46.4%), followed by other diseases of the

Central Nervous System (26.5%), which, together, account for the 62.9 % of neurological diseases revealed by this study. This confirms the data given by the research carried out by Góis & Veras²⁵ (2010), in which Brazil presents the second highest CVA mortality rate in the world and has what is considered the highest death rate from this cause in the population above 65 years of age. CVA represents the third most frequent cause of death in several countries of the world and is, in Brazil, the main cause of physical and mental disability, affecting especially persons above 55 years of age²⁶. However, the results which follow in greater order of prevalence (also) deserve special attention, they are the neoplasms (7.3%) and the respiratory diseases (7%). Neoplasms, in the majority of cases, occur after 60 years of age. About 80% of cancer cases are related, either directly or indirectly, to cancerigenic agents or exposure to them, the disease being the second most frequent cause of death in Brazil²⁵. Respiratory complications may arise frequently from prolonged rest, as in the case of a sequela of a CVA, which can lead to alterations in the gait, then to the fall of an elderly person and subsequently to a fracture which leaves the person bedridden¹⁹. When these consequences occur together with the normal process of aging, with its weakening of defense mechanisms and serious alterations in the rib cage and lungs, then alterations to the condition of the lungs are facilitated¹⁶.

As regards the degree of functional dependence, 77% of the patients studied in his research are bedridden. The morphological and functional alterations which occur during the normal aging process are physiological, but the accumulation of these alterations - such as the loss of MF, bone density, deficits of balance - can entail limitations in the functional capacity of the elderly in their attempts to fulfill their DAs such as: taking a bath, dressing, defecating and urinating unaided, eating, walking, sitting down, getting up, getting out of a chair or of bed. With the appearance of a disease, the consequent harm to the functional ability may be aggravated and lead the person into a condition of dependence²⁷. This explains the increase in the number of people dependent on long-term care, giving rise to prolonged, repeated hospital admissions which absorb a great part of the resources available to the health field²².

It is evident that with the increase in age, there occurs greater vulnerability to the risk of those illnesses and the prevalence of those chronic diseases which lead to the greater part of the cases of disability among the elderly²⁷. According to the IBGE – Synthesis of Social Indicators (Síntese de Indicadores Sociais) 2010²⁸, the greatest frequency of the declaration of functional disability was, in fact, seen among the elderly of 75 or more years of age (27.2%).

The process of aging is often associated with the existence of some chronic-degenerative disease which can lead to some kind of disability and/ or functional dependence. This situation brings about an increase in the number of persons dependent on long-term care, leading to prolonged, repeated hospital admissions which consume a large part of the resources of the health field²².

As regards the patients attended by the physiotherapy sector during this research project, the treatment prognoses were: death, hospital admission, termination of treatment, or continuation of treatment. The patients, in their majority, were again admitted to hospital (40.9%) and the treatment of 33.5% under the program was concluded after the achievement of the objectives established.

This may be explained by the fact that the individuals here studied are difficult to deal with and to care for, that is to say, they present various co-morbidities associated with their basic disease and rarely have the advantage of a support structure capable of providing adequate care outside the hospital environment. Further, differences are found in the profile of patients needing early readmission to hospital as between the various medical centers considered equivalent with regard to services rendered²⁹. In the larger part of the elderly population here studied, the average patient has at least three chronic diseases and the probability of their admission to hospital by virtue of some further threat to health is 20% greater³⁰.

The transfer of the patients to hospital was probably motivated by complications in their general condition as many of them presented various co-morbidities associated with their basic disease and rarely enjoyed a support structure capable of providing adequate care outside the hospital environment. These patients were, therefore, re-admitted to hospital in view of the uncertainty of their clinical situation³¹.

Other groups of patients presented an improvement in their general clinical picture or remained stable over a period, thus achieving the objective of the treatment proposed, including the training of the caregiver in undertaking the exercises and adequate positioning, transfers, adaptation in DAs and /or in dealing with any aggravation of the lung situation, by means of the appropriate techniques and maneuvers of respiratory physiotherapy, leading to the termination of the service²². As was also visualized in the study of Góis & Veras¹⁴ (2006) regarding the percentage improvement of the patients as a result of the household physiotherapy applied, the classification which showed the best result, that of "considerable improvement", corresponded to a therapeutic improvement in 35% of the factors related to confinement to bed and the classification of "good response" which corresponded to the therapeutic improvement in 50% of the factors related to confinement to bed. This is to be explained because as the majority of the diseases in evidence here are chronic, the result of the treatment tends to be slow and slight, but this does not reduce the value of household physiotherapy because small results are of great importance for the quality of life of the bedridden. These results correspond to the improvement produced by the treatment as envisaged in this research project.

The kind of treatment used by the patients points to the greatest predominance of the use of motor physiotherapy alone (50.5%), followed by respiratory physiotherapy alone (25%), and then joint treatment with both kinds of physiotherapy - motor and respiratory (24.3%). The aging process causes various kinds of loss to the human organism, such as the reduction of muscle tissue on the event called "sarcopenia", caused by a variety of factors such as the diminution of the number of muscle fibers, atrophy of the muscle fibers, reduction in the number of motor units and the sedentary life style, as well as metabolic and hormonal factors, of the reduction of the activity of the glycolytic enzymes and of the increase in the quantity of non-contractile tissue as also of the conjunctive and adipose tissues. The harm thus done to the muscular function affects the elderly person's quality of life considerably, either restricting the exercise of the activities of daily life or making them impossible. Beyond that, further damage is caused to the pulmonary function with

the loss of the elasticity and the atrophy of the skeletal muscles which assist breathing, thus reducing the ability of the rib cage to re-expand. There occurs, further, a reduction of the resistance of the bronchioles, facilitating the expiratory collapse; the alveoli are also reduced in number due to the rupture of the interalveolar septa and there is a reduction in the overall respiratory surface, an increase in the residual volume and a diminution of vital capacity. These alterations, associated with the appearance of disease, lead to considerable functional losses and such persons require treatment such as physiotherapy to achieve a return to their former quality of life^{20, 32}.

With regard to the length of treatment, this was short, i.e., of between one and ten weeks, in 67.8% of the cases. This may be explained by the high proportion of new patients referred to the sector, especially in 2010 and 2011. The members of the multi-disciplinary team come better to understand the role of the physiotherapist and his activity and begin better to work as a team with a new strategy seeking to reorganize the work and improve the quality of the service³³. The insertion of this professional brings with it the quest for promotion and the perfection or adaptation of the individual (patient) to a better quality of life by means of a therapeutic relationship³⁴.

The study conducted by Kokinos et al. discovered a change in the risk of mortality as related to the practice of physical activity. The study affirms that for each 1 MET (a unit to quantify the intensity of the physical activity undertaken) in the ability to undertake the exercise, there is a reduction in the risk of mortality of about from 10 to 25%, for both men and women, though it is greater for women³⁵.

Thus the practice of a physical activity such as physiotherapy can bring an improvement in the quality of life to this population which presents some degree of deficiency, with the objective of giving personal satisfaction in all the aspects of life and not just of providing a life free of disease. The relationship between the habit of physical activity and quality of life is, therefore, close³⁶.

Conclusion

It may thus be concluded that the household physiotherapy of the municipality of São Bernardo do Campo is characterized by chronic diseases in individuals of between 70 and 79 years of age, in their great majority women, widows with incomplete fundamental schooling, and bedridden, and that the main focus of the household physiotherapy applied is the motor rehabilitation by means of the treatment of individuals suffering from the sequelae of CVA. This characterization permits us to get to know the patients better, for the purpose of associating technical knowledge and knowledge of the population attended to construct, expand and improve policies of household health in relation to the planning of the assistance and outreach of the service, as well as permitting that this knowledge should be extended to other programs of household assistance and also as a first step toward future research in this field.

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The practice of pharmacy in Iraq

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Abstract

Despite the early history of pharmacy in ancient Iraq; there is a lack of data concerning the profession of pharmacy in this country. Hence; this commentary aims to explore the current scenario of pharmacy in Iraq at both public and private sectors with the challenges that facing it. All the available country documents and web-resources indicated pharmacy in Iraq were gathered and recoded for a period of six months. The emergence of the first apothecary was in Iraq in 754 AC. Pharmacy Act was launched in 1923, followed by the establishment of the first college of pharmacy in 1936 and the incorporation of the Syndicate of Iraqi Pharmacists (SIP) in 1967. Pharmacy in Iraq has been affected by variety of influences including thirty two years situation of political conflicts; business-orientation; content-oriented education; and a limited role of pharmacists at the public sector.

Key words: Apothecary, Syndicate of Iraqi Pharmacists, Ministry of Health, Iraq.

Introduction

Iraq is a country of Arab region with a population of 34 million people. In ancient times it was known as Mesopotamia, the centre of ancient Babylonian and Sumerian 6th millennium BC. During that time, early records of drug therapy were recorded on cuneiform clay tablets¹. Some of these therapies are still in use to this date². The capital city Baghdad witnessed the emergence of the first apothecary in the world 754 AC³. By the advent of the twentieth century, specifically in 1923, the first pharmacy act was launched to regulate the registration of pharmacists, license of the profession, and selling of pharmaceutical products.

In the fifties of the last century Iraq witnessed a great development and prosperity in its health and economic situation as a result of its oil wealth. Sadly, it sustained a tragic decline through three dark periods. The Iraq-Iran war (1981-1988); the Gulfwar and the imposed embargo by United Nations (1991-1998); and the US-led invasion (2003-2011) to change the regime in Iraq⁴. In consequence, Iraq suffered a tremendous loss of human resources; co-

Category	Indicator
Total population	34207248
Total male	17419724
Total Female	16787524
Life expectancy at birth (years)	69.6
Total median age (years)	21.1
Annual population growth rate	3.4
Urban population (% of total population)	66
Dependency ratio	75%
Crude birth rate/1000 of the population	38.1
Crude death rate/1000 of the population	3.9
Mortality rate for children under 5 years/1000 of live birth	24.2
Literacy (% of total population)	78.2
Religions (% of total population)	Muslim 97, Christian and others 3
Language (officials)	Arabic, Kurdish
HIV/AIDS-adult prevalence rate (% of total population)	< 0.1

Table 1. Demographic indicators of Iraqi

llapse in security; deadly sectarian violence; killing and kidnapping of scientific personnel. All led to the fled of more than 3 million of Iraqis to other countries⁵. Pharmacy was not excluded from those influences that have swept the country. After the departure of U.S. forces in 2011, many challenges remain facing the country to rebuild what war-ravaged and restore its previous prosperity in the Middle East (Iraqi profile is explained in Table 1). This paper is sought to explore the current scenario of pharmacy practice in Iraq, determine the challenges that facing it and the opportunities that could shape its pharmacy future.

The health system

The ministry of health MOH is the main body responsible of providing health care and treatment services at a low cost to the population through its public constructs. These include public hospitals (173), teaching hospitals (66), primary health centres (2538)⁶. The private sector is strong and comprises private hospitals (96), physicians' clinics (10000-12000), scientific drug bureaus SDBs (396), drug stores (350), and community pharmacies (6140); all provide services for profit7. Private clinics, owned and managed by physicians, are distributed throughout the country for consultation. SDBs import medicines and medical supplies from international pharmaceutical industries for both sectors on wholesale basis. The private sector is regulated by the joint work of MOH and the Syndicate of Iraqi Pharmacists (SIP); both are responsible for post-marketing surveillance.

Pharmacy education

The first pharmacy college was established in Baghdad, The Royal College of Pharmacy and Chemistry, in 1936. At recent, there are seventeen pharmacy colleges (12 public and 5 private) distributed in different regions of Iraq. Public colleges are affiliated by the Ministry of Higher Education and Scientific Research. While, the private colleges fall under the private investment. The criteria of student admission depend mainly on the high school average-grades which should be more than 95 percentages in the public colleges and not less than 90 percentages in the private one. All pharmacy colleges offer bachelor degree in pharmaceutical sciences on completion of ten semesters (five years) (Iraqi pharmacy curriculum is presented in Table 2). Post-graduate programmes (Master Degree and Doctorate of Philosophy) are available exclusively at the public colleges. Pharmacy teaching in Iraq is still characterised by a traditional lecture approach, content-oriented, to a large number of students in the session hall⁸. That's not to forget that this method had graduated hundreds of qualified pharmacists in the last four decades. Pharmacy education in recent years had been affected remarkably with the critical and volatile status of Iraq. Most of the teaching staff fled out of the country as a result of the serious and devastating situation.

Table 2. Curriculum of pharmacy colleges in Iraq

Year	Topics
	Human Biology, Principles of Pharmacy Practice, Analytical Chemistry, Computer Sciences,
1 st year	Mathematics and Biostatistics, Medical Terminology, Human Anatomy, Pharmaceutical Calculations,
	Medical Physics, Organic Chemistry, Histology, and Human Rights
and woor	Physical Pharmacy, Medical Microbiology, Organic Chemistry, Physiology, Pharmacognacy,
2 nd year	Medical Virology and Parasitology, Democracy, Arabic Language, and Communication Skills
2rd woor	Inorganic Pharmaceutical Chemistry, Pharmacognacy, Pharmacology, Biochemistry, Pathophysiology,
5 ^{rr} year	Pharmaceutical Technology, Organic Pharmaceutical Chemistry, and Medical Ethics
Ath wear	Pharmacology, Organic Pharmaceutical Chemistry, Clinical Pharmacy, Biopharmaceutics, Industrial
4 year	Pharmacy, Pharmacology, and General Toxicology
	Organic Pharmaceutical Chemistry, Industrial Pharmacy, Clinical Chemistry, Applied Therapeutics,
5th woor	Clinical Toxicology, Therapeutic and Drug Monitoring, Clinical Laboratory Training,
J ^m year	Pharmacoeconomic, Advanced Pharmaceutical Analysis, Hospital Training, Dosage Form Design,
	Pharmaceutical Biotechnology, and Graduation Project

Employment

Shortly after graduation, pharmacy graduates are appointed by MOH as intern-pharmacists in different public hospitals to start the medical gradation programme that last for three consecutive years. In addition, they have the right to work at any private setting on part time bases (after 4 p.m.). Most pharmacists acquire good medical knowledge through this time that boosts their skills in providing community care later. On completion of this period, they are classified as practitioner-pharmacists who are eligible to own any private work in pharmacy add to their hospital work. Hospital pharmacists in Iraq have a limited role in providing pharmaceutical care and lacked the privilege that physicians enjoyed, the case of most developing nations. Along with the good income of the private sector; most pharmacists discontinue their public work seeking for their private professional work. A shortage of hospital pharmacists is another challenge facing the health system in Iraq.

Community pharmacies

Community pharmacies are owned and managed by licenced pharmacists. Two types of licence are offered by SIP; full-time licence (for retired pharmacists and those who are not engaged with any institutions) and part-time licence (for those who are committed to work at state institutions in the morning). Generally, community pharmacies in Iraq are small in size; the total area is slightly more than 20 square meters. Medicines are clearly visible on glass shelves and easily accessible during the dispensing process. Selling products is mainly through the dispensary area; privacy areas are almost lacking. According to the regulation, the distance between adjacent pharmacies should be more than 25 meter. An authorized pharmacist should be present during the working time. However, some pharmacists are less sensitive to that and have led to the intrusion of unauthorized individuals to the private sector. Those vendors had weakened the important role of pharmacist in this sector. This phenomenon is often observed in the developing countries9. International chain pharmacies are not available in Iraq. A good public access to the Iraqi community pharmacies either to purchase medicines or seeking a medical advice was reported earlier; however, the professional performance of community pharmacists was poorly appreciated¹⁰.

Conclusion

Pharmacy in Iraq is dating back to the Babylonian civilization of ancient times. Despite this early record, it was affected by a variety of influences that weakened the current pharmacy practice. These include thirty two years atmosphere of political conflicts; pharmacist-business-orientation; content-oriented education with poor building of pharmacy skills; and a limited role of pharmacists at the public sector. To improve the current practice of pharmacy and meet the actual public need, a number of issues should be taken into consideration. There is a need of fundamental changes in the current method of teaching pharmacy, promote abroad pharmacy-scholarships and collaboration with the international pharmacy colleges to countervail the current shortage of qualified and skilled teaching staff. Efforts should be paid to articulate new policies that may improve the role of hospital pharmacists and promote the orientation more towards patients' care. Further, improving the existing laws pertaining to the private sector is warranted to make pharmacists more adhered to their community practice and eliminate the phenomenon of pharmacy-intruders.

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Author contribution

IRI collected the required information and drafted the manuscript. MAH supervised and reviewed the project. Both authors read and approved the final draft.

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Pharmacological oral conversion of atrial fibrillation with rapid ventricular response in sinus rhythm with amiodarone in ambulatory conditions

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Abstract

Amiodaron is a drug for medical treatment of heart rhythm disorder. Atrial fibrillation is a heart rhythm disorder characterized with irregular heartwork caused by absence of atrial contraction. The goal of this research paper is to determine the efficacity of amiodaron on conversion of atrial fibrillation with fast heartventricle reply into sinus-rhythm and all that in the period of 90 days. Two groups of patients with atrial fibrillation were examined: A-group (patients who werw medically treated with amiodaron from the IIIrd group of antiarhythmical drugs) and B-group (patients who werw medically treated with antiarhythmical drugs from groups II, IV) not taking into consideration the patients who were medically treated with antiarhythmical drugs from group I. After analyzing and comparing the results it was determined: 1-amiodaron is much more efficient in the conversion of atrial fibrillation into sinusrhythm in relation to antiarhythmical drugs wich were used on patients from the second gruop, 2-in attempt of conversion of atrial fibrillation into sinus-rhythm, the first thing recomanded to do is the medical treatment with amiodaron if there are no any contractionin the usage of the same.

Key words: amiodaron, atrial fibrillation with fast heartventricle reply, conversion, 90 days

Introduction

A. Amiodarone belongs to the third group of antiarrhythmic drugs, the composition is a benzofuran derivative, and its structure contains atoms of iodine. The mechanism of action consists in blocking unactivated sodium, potassium and calcium channel and blocking effect and stimulation of alpha and beta receptors. It leads to: 1-prolongation of the action potential of atrial and ventricular; 2- it prolongs refractory cardiac vascular structures, 3-it reduces automaticity in sinoatrial and atrioventricular node.

Indications for using of amiodarone are: 1 - prevention of life-threatening ventricular tachycardia and fibrillation, 2 - treatment of atrial tachycardia and fibrillation, 3 - prophylaxis of arrhythmias after myocardial infarction, 4 - tachyarrhythmias associated with WPW syndrome; 5 - chronic heart failure (extended time of survival).

Contraindications: 1 - hypersensitivity to amiodarone or iodine, 2 - sinus bradycardia or SAblock, 3 - sinus node disease and severe conduction disturbance (if not implanted pacemaker) 4 - thyroid disease, 5 - pregnancy and lactation.

Side effects: 1 - bradycardia (especially in older patients), 2 - heart failure, 3 - liver damage (acute and chronic), 4 - hypothyroidism or hyperthyroidism, 5 - photosensitivity, 6 - asymptomatic corneal deposits (in treatment longer than 6 months).

Dosage and methods of administration: 1-oral: initial dose 3x200 mg, maintenance dose 200 mg/ day (note: it is always recommended the lowest possible dose), 2-intravenous injection: in a dose of 5 mg / kgtt for 3 minutes, 3- intravenous infusion: dose 5 mg / kgtt in 250.00 ml of 5% glucose solution (maximum 1200 mg / day).

A. Cappuci and sur. found that amiodarone in a dose of 200-400 mg / day before electroconversion, increases the efficiency of the same for 88%, induces in 5% of cases the process of spontaneous conversion and reduces the number of repeated episodes of artial fibrillation (14).

S. Giri and sur. in a study from 2001, found that amiodarone per os in combination with B-blockers prevents atrial fibrillation, reduces the risk of stroke and ventricular tachycardia (16).

B. Group II-antiarrhythmic drugs represent Bblockers (propranolol, atenolol, metoprolol, carvedilol, bisoprolol, nebivolol...) and they reduce the phase 4 depolarization over its competitive inhibitory activity of the B-adrenergic fibers.

Group IV– antiarrhythmic drugs represent calcium antagonists (verapamil, diltiazem...) that reduce the level of calcium available to the cell membrane and thus reduce the potential change comes from the entry of calcium into the cell where the end result of slow conduction of the tissue (eg in the AV-node).

C. Atrial fibrillation (AF) is the most commonly diagnosed arrhythmia (1% in adults, 6% at the level of the world population) that is characterized by an irregular ventricular rhythm caused by a lack of atrial contraction and the absence of sinus rhythm, which gives the characteristic ECG recording with a noticeable absence of P-wave, generally narrow QRS complexes (in aberrant enforcement or branch block can not wide and uneven spacing between the individual R-tines (13).

Frequency of heart rate is usually rapid, although it can move in the normal 60-100/min, in exceptional cases under 60/min. AF mainly occurs in heart failure, hypertensive cardiovascular disease, coronary artery disease and valvular heart defects. It can be caused by caffeine, nicotine, marijuana ...It may occur in hyperparathyroidism, in lung disease, after lung surgery, in acute pulmonary embolism, in myocarditis, in acute myocardial infarction (particularly the right coronary artery).

AF can be paroxysmal (it spontaneously occurs within 24 hours), persistent (lasting more than 24 hours) and permanent (when you can no longer restore sinus rhythm).

AF is associated with increased risk (17x) the occurrence of cerebrovascular events and is considered to be about 15-20% of such events caused by the presence of AF.

Paul S. and sur. point out that by 2050, around 10 million people in the U.S.will have AF. In the most recent guide American College of Cardiology / American Heart Association states that the conversion of AF in sinus rhythm THE FIRST LINE of therapeutic approach (2).

From the above it is clear that AF is serious cardiac event, which also requires a serious approach that primarily involves the attempt to establish sinus rhythm (hormonal or electroconversion) or rate control in case of permanent AF.

1. Objective of the work

To demonstrate the potential and effectiveness of oral amiodarone action on the establishment of sinus rhythm from the state of AF with rapid ventricular response. It is assumed continuous oral administration of amiodarone in period to 90 days. Here are exempt from consideration parenteral (intravenous) access to amiodarone in the conversion fibrillation in sinus rhythm.

2. Patients and methods

2.1. Patients

The subjects of both sexes aged 33-84 years are patients who are ambulatory treated for AF with rapid ventricular response in JZU DZ (Health Center) Živinice during the period of 24 months. Patients were classified into two groups: A-patients who were treated with amiodarone and B-patients who were treated with other antiarrhythmic drugs from groups II and IV. In consideration there were not taken patients with AF treated with anti-arrhythmic group I (disopyramide, propafenone...).

2.2. Method of work

In a retrospective, randomized and comparative study during 24 months (from the end of 2010 to the ending of 2013)there were followed for the results of treatment of 180 patients divided into two groups: 1. -A group of 89 patients treated with amiodarone and 2. B-group of 91 patients treated with other medications. It is also monitored the success of conversion of atrial fibrillation in sinus rhythm and the time required to reach the same success.

In the A-group of patients were treated by the drug amiodarone at a dose of 600-1200 mg 3 times daily, on average, about 50% of patients who were treated for longer than the time of the study, who have been clinically treated in a certain period, and who had a diagnosis of permanent AF and also treated by other methods and medications.

In the first month of treatment the patients had ambulatory follow-up examinations every 7 days, later each month when the mandatory ECG recorded and corrected former dose. Testing was ambulatory type assuming full cooperation of patients in terms of regular medication and adherence to other recommended dietary measures. In the end of the testing, it is accessed to treatment and comparison of results.

3. Results and discussion

After statistical analysis and comparison of treatment results it is obtained the study findings that register the effect of amiodarone on atrial fibrillation and hormonal establishment of sinus rhythm.

In A-group (89 patients treated with amiodarone) in 46% or 41 patients there was a conversion of atrial fibrillation to sinus rhythm and in 54% or 47 patients the treatment was unsuccessful, there was still an atrial fibrillation. In B-group (91 patients treated with other drugs)only 1,1%, or 1 patient there was a conversion of atrial fibrillation to sinus rhythm, in the other 98,9% or 90 patients still persisted atrial fibrillation.



a) Group/treated with amiodarone



b) Group/treated with other antiarrhythmics Figure 1.

The time required for successful conversion with amiodarone was generally 7-90 days.

In A-group at 4,87% patients (2 patients), the conversion was successful after 7 days, at 12,19% (5 patients) after 14 days, at 14,63% (6 patients) after 21 days, at 31,7 (13 patients) after 30 days, at

19,51% (8 patients) after 60 days, and in the other 17,07% (7 patients) after 90 days. The majority of patients had a successful conversion after 30 days. In B-group it was the only successful conversion registered after 21 days, and it was the only one case, there cannot be determined whether it is a result of successful conversion occurred under the influence of drugs or it is a result of spontaneous conversion.



Figure 2. Time required for successful conversion

Discussion

Galperin and sur. report that amiodarone converts AF to sinus rhythm 79,54% of cases compared to placebo, where the percentage is 38,46%. The same study reported that amiodarone at a dose of 600 mg / day converts AF to sinus rhythm at 1/3 of patients on oral treatment, reduces the number of candidates for electroconversion and it also reduces relapse of AF (15).

Holly R. Middlekauf and sur. published a study in 1992 that amiodarone at a dose of less than 300 mg / day in 53-79% of cases, maintains sinus rhythm without any toxic effects (12).

A. Sheba and sur. report that amiodarone after 0,4 to 2,5 years of continuous oral treatment in 62% treated patients, converts AF to sinus rhythm, while at temporarily treated patients the percentage was 48% (10).

Bramah N. Singh and sur. present the results of study that amiodarone (27.1%) and sotalol (24.25%) are equally effective in conversion of AF to sinus rhythm, but it is amiodarone (487 days without fibrillation) than sotalol (74 days without fibrillation) superior in maintaining of sinus rhythm (11).

Zerembski D. G. and sur. report that amiodarone is (72.6%) more efficient to flecainide (48.5%) in conversion of AF to sinus rhythm (6). G. E. Kochiadakis and sur. present the results of a comparative study in which amiodarone is (47.05%) more effective than propatenone (40.62%) in conversion of AF to sinus rhythm (9).

Jonathan S. Piccini and sur. announce that amiodarone is more effective in preventing recurrence AF than dronedarone, but dronedarone is slightly more effective in maintaining of sinus rhythm (7).

Vitolo E. and sur. publish the results of a comparative study that amiodarone is (79%) more effective than quinidine (46%) in the prophylaxis of AF (3).

Zeheneder M. and sur. present that amiodarone is (60%) more effective than quinidine (25%) in conversion of AF to sinus rhythm and equally effective as compared to quinidine-verapamil (55%) combination (4).

Roy D. and sur. publish the results of a comparative study that amiodarone is more effective than sotalol and propafenone in prevention of recurrent AF. There were 35% of amiodarone repeated AF, and 63% of recurrent AF with sotalol and propafenone (1).

Levy S. reports that amiodarone is the drug of FIRST CHOICE in treatment of AF (8).

Conclusions

Testing shows less than half (46%) efficacy of medication (amiodarone) oral conversion of atrial fibrillation to sinus rhythm. Amiodarone is, in comparison with other antiarrhythmic drugs, showed overwhelming potential in oral conversion attempts of absolute arrhythmia based on atrial fibrillation to sinus rhythm. It is recommended that in attempt conversion of atrial fibrillation to sinus rhythm, always start with amiodarone if

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Assessment of prognostic significance of microvessel density in clear cell renal cell carcinoma

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Abstract

Introduction: Clear cell or conventional renal cell carcinoma (CRCC) is the most predominant renal tumor with unpredictable tumor behavior.

Objective: The aim of the study was to investigate the prognostic value of microvessel density (MVD) in CRCC and to correlate it with other histological parameters such as tumor size, presence of tumor necrosis and hemorrhage, nuclear grade, and pathological stage as well as with patient's survival.

Methods: Tumor samples taken from 40 patients with histopathology diagnosis of CRCC and tissue samples from 20 normal kidneys as a control group were examined by immune-histochemical staining for CD31.

Results: The mean MVD in CRCC was significantly higher than in the benign kidney tissue (109.5 vs. 23.2) (U=699, P<0.0001). MVD values in CRCC were negatively corr-elated with degree of tumor necrosis (r =-0.304, P=0.055); the Fuhrman nuclear grade (r=-0.132, P=0.415); the tumor size (r=-0.09, P =0.578); the pathological stage (r=-0.03, P=0.817) and degree of tumor hemorrhage (r=-0.01, P=0.93). MVD values in CRCC were positively correlated with DFS (r=0.182, P=0.334); PFS (r=0.162, P=0.653) and CSS (r=0.160, P=0.731) in CRCC.

Conclusion: Our data indicate that an increased MVD has been associated with smaller tumor, size, lower nuclear grade, lower pathologic stage and lower degree of tumor necrosis. Increased MVD has been associated with better outcomes and better overall survival in CRCC.

Key words: Clear cell RCC, CD31, MVD.

1. Introduction

Renal cell carcinoma (RCC) is a heterogeneous group of tumors, which demonstrates wide variation in histopathological features, as well as clinical diversity, with unpredictable tumor behavior. The mortality incidence ratio is higher in RCC than in other urological malignancies [1]. RCC is the most common malignancy of the adult kidney, accounting for 2% of all adult malignancies [2]. Surgical treatment is curative in only 50-60% of RCC tumors localized in the kidney [³,⁴].

Clear cell or the conventional renal cell carcinoma (CRCC is the most predominant renal tumor and accounts for about 70% of diagnosed RCC tumors [5]. Histopathological evaluations of RCC have found a highly vascularized neoplasm which demonstrates clear evidence of abundant angiogenesis and abnormal blood vessel development [6].

Angiogenesis is the formation of new capillaries by outgrowth of endothelial cells from preexisting blood vessels [7]. The onset of angiogenesis depends on a shift in the equilibrium in extra cellular matrix (ECM) created by numerous inhibitors and stimulators towards an activation of angiogenesis [8]. Once activated, a sequence of events is required in order to form new blood vessels. Until now, many angiogenic molecules have been identified [9]. Vascular endothelial growth fact-or (VEGF) is a potent endothelial cell mitogen and is an important component of the angiogenic stimulus in a range of human neoplasias [10]. Although the related angiogenic factors are intensively investigated in various tumors, determination of MVD, a measure of the degree of angiogenesis, is one of the most examined parameters for angiogenesis in cancers. Renal cell carcinomas (RCCs) are solid tumors that arise from the proximal convoluted tubules of the kidney and are characterized by abundant neovascularization [11]. Recent studies revealed a direct correlation between MVD as measured by various endothelial markers and tumor growth or risk of metastasis in a variety of cancers including RCC [12,13]. The assessment of MVD might be useful in this effort and has several advantages as a clinical test, being simple and relatively quick to assess, while using widely available techniques such as immunohistochemistry (IHC) on formalin-fixed paraffin-embedded tissues, etc. A popular method of assessing MVD named 'hot-spots,' is based on manually counting vessels in the most vascularized areas of histological sections.

In the clinical practice, the significance of MVD in CRCC may have a dual function: prognostic assessment and treatment guidance.

The aim of the study was to investigate the prognostic value of microvessel density in clear cell renal cell carcinoma (CRCC) and to correla-te with histological parameters such as tumor size, presence of tumor necrosis and hemorrhage, nuclear grade, and pathological stage as well as with patient's survival.

2. Materials and Methods

2.1. Patients

This study has included 40 patients, 19 males and 21 females with a median age of 60.3 years (range 36-81 years), with histopathologically verified CRCC after surgery between January 2008 and July 2013. Each patient has signed an informed consent and the study has been approved by the Ethics Committee at the Faculty of Medicine, University of Prishtina.

Radical nephrectomy has been performed in 33 cases, whereas partial nephrectomy in seven cases. None of the patients were treated with radiation, chemotherapy, or immunotherapy prior to surgery. Most of the patients have been followed-up with clinical and radiological examinations at regular intervals. Survival has been determined from the time of nephrectomy to the latest follow-up. At the latest follow-up time of 29 months, (range 2-75 months), 6 died because of CRCC with median survival time of 9 months (range 2-24 months), and one died due to unrelated cause. Tissue samples have been selected from normal kidneys of 20 cases and have been considered as a control group.

2.2. Tumor staging

The tumor stage has been determined in accordance with TNM classification system 2009 [¹⁴].

This classification system has been used to evaluate the tumor size, the status of the regional lymph nodes and the perinephric tissue, and tumor invasion through the renal capsule into perirenal fat or into major renal veins at the renal hilum. There have been identified 17 cases of stage I (42.5%), 8 cases of stage II (20.0 %), 12 cases of stage III (30.0 %), and 3 cases of stage IV (7.5%). The tumor size has been measured as the maximal diameter of the surgical specimen. The median tumor diameter was 71.0 mm (range 13-125 mm).

2.3. Morphological classification

Histopathological nuclear grading has been performed by pathologists of the Institute of Pathology, University Clinical Center of Kosova, based on the worse histologic features, according to Fuhrman and co-workers [¹⁵]. There have been classified 25 (62.5 %) cases as Fuhrman grade 2; 13 (32.5 %) cases as Fuhrman grade 3, and 2 (5.0 %) cases as Fuhrman grade 4. All the examined cases belonged to conventional histopathological type of RCC-clear cell renal cell carcinoma (CRCC).

2.4. Tissue collection and preparation

Tumor and kidney cortex tissue samples obtained from the surgical specimen, fixed in buffered neutral formalin and embedded in paraffin were investigated. Tissue sections were cut and stained with haematoxylin and eosin (H&E) as well as immunohistochemical staining.

2.5. Immunohistochemistry

Representative paraffin tumor blocks have been selected for primary evaluation of haematoxylin/ eosin stained slides. For microscopic evaluation 4µm thick paraffin sections have been slized. The slides were treated with standard procedures for deparafinating, rehydrating, and microwave heating and immunohistochemical (IHC) staining. For the IHC technique, the antibodies used were: CD 31 (1:40, Clone JC70A, RTU; DAKO, Denmark). Microvessel counting was used for angiogenesis assessment. Immunostained tumor sections were scanned at high power magnification (200 xs) to identify the areas with the highest vascular density-so called "hot-spot". The MVD was measured in ten fields with high density of CD31-positive cells and cell clusters at 200x magnification. The mean value of microvessels in ten examined hot spots per section was calculated and the MVD median value was used to classify each group of tumors in "high", "moderate" and "low", by two blinded observers to obtain a consensus categorization. In this case, the mean value is less than 50 blood vessels or endothelial cells were designated as "low" MVD; 50-110 blood vessels or endothelial cells as "moderate" MVD; whereas more than 110 blood vessels or endothelial cells were represented as "high" MVD. Staining intensity was evaluated separately and independently three times, and the quantification of volume density was also evaluated three times by one observer without knowledge to preceding results. Any discordance was resolved by reexamination by a pathologist.

2.6. Statistical methods

The statistical package "In Stat 3" was used for data processing. Among statistical parameters the structure index, arithmetical average, standard deviation, median, minimal and maximal values were calculated. The Mann-Whitney U test was used to identify differences in non-parametric variables for two independent groups. The correlation between two phenomena was calculated using the Spearman Correlation for the non-parametrical data, and the Pearson Correlation for the parametrical data. All tests were verified by using a degree of reliability of 99.7% (P<0.01) with a reliability of 95% (P<0.05).

3. Results

3.1. Immunohistochemical assessment of micro-vessel density (MVD)

Positive staining of CD31 was detectable in the membrane of the endothelial cells in the stroma. The average value of MVD in patients with CRCC was 109.5 (DS \pm 76.5), varied from 5 to 292. The average value of MVD in the benign kidney tissue, as the control group, was 23.2 (DS \pm 22.5), varied from 0 to 55. The Mann-Whiteny test showed a difference with an important statistical significance betwe-

en values of MVD regarding two groups (U=699, P<0.0001) (Table 1). Out of 40 immunostained CRCC specimens, 10 (25.0%) showed low expression of CD31s (Figure 1.a.), 12 (30%) showed moderate expression of CD31s ((Figure 1.b.) and 18 (45%) showed high expression of CD31s (Figure 1.c.). Patients with "low-MVD" showed the mean MVD: 23.5; those with "moderate-MVD": 80.5; and those with "high-MVD" 156.5. The average value of MVD in female patients with CRCC was 109.0 (DS± 77.7), varied from 5 to 292. The average value of MVD in male patients with CRCC was 109.9 (DS± 77.3), varied from 18 to 239

Table 1. Summarized results of microvessel density(MVD) in clear cell renal cell carcinoma (CRCC)

Characteristics	No. cases	MVD	p-value
Control group	20	23.2*	P<0.0001
CRCC	40	109.5*	P<0.0001
Age			
< 60	20	107.7	P=0.915
>60	20	110.9	P=0.915
Sex			
Male	19	109.9	P=0.935
Female	21	109.0	P=0.935
Tumor size			
< 40 mm	5	133.8	P=0.585
40-70 mm	20	114.2	P=0.585
>70 mm	15	95.1	P=0.585
Grade			
G 1-2	25	118.3	P=0.350
G 3-4	15	94.7	P=0.350
Stage			
T1 - 2	25	115.7	P=0.513
T3-4	15	99.1	P=0.513
Survival			
DFS	29	114.0	P=0.457
PFS	11	89.6	P=0.457
CSS	6	91.0	P=0.457

[†] Statistically significant difference of MVD among the study groups (P<0.0001); DFS- Disease free survival; PFS –Progression free survival; CSS- Cancer specific survival.

The Mann-Whitney test has not recorded any difference with an important statistical significance for the values of MVD between both genders (U'=203, P=0.935) (Table 1).



a) CD31⁺ vessels. Low MVD



b) CD31⁺ vessels. Moderate MVD



c) CD31⁺ vessels. High MVD Figure 1. Microvessel density (MVD) expressed through increased expression of CD31 in our patients with CRCCs (a. Low MVD, b. Moderate MVD and c. High MVD).

3.2. MVD in relation to clinicopathologic parameters

Patients with a tumor size < 40 mm, showed the average value of MVD: 133.8 (SD \pm 71.8), varied from 29 to 219; patients with a tumor size from 40 to 70 mm, showed the average value of MVD: 114.2 (SD \pm 81.9), varied from 12 to 292; whereas patients with a tumor size > 70 mm, showed the average value of MVD: 95.1 (SD \pm 72.5 varied from 5 to 239. The Unpaired T-test has not shown any difference with an important statistical significance between MVD values regarding the tumor size (F=0.542, P=0.585), (Table 1). The average value of MVD in patients with CRCC nuclear grade 2 was 118.3 (DS± 82.1), varied from 12 to 292; while in patients with CRCC nuclear grade 3 and 4 was 94.7 (DS± 66.1), varied from 5 to 233. The Unpaired T-test has not shown any difference with an important statistical significance between MVD values and the tumor nuclear grade (T=0.945, P=0.350).

The average value of MVD in patients with CRCC, stage I & II was 115.7 (DS \pm 81.5), varied from 12 to 292, while in patients with CRCC pathological stage III & IV was 99.1 (DS \pm 68.8), varied from 5 to 233. The Unpaired T-test has not shown any difference with an important statistical significance between values of MVD regarding the tumor stage (T=0.660, P=0.350).

The degree of angiogenesis in primary CRCC had a prognostic significance. The average value of MVD in patients with CRCC with the DFS status was 114 (DS \pm 78.0), varied from 12 to 292, whereas the average value of MVD in patients with CRCC with the PFD status was 89.6 (DS \pm 71.0) varied from 5 to 233. In addition, the average value of MVD in patients with CRCC with the CSS status was 91.0 (DS \pm 73.5), varied from 19 to 233. The Mann Whitney test has not shown any difference with an important statistical significance between MVD values in terms of patients survival (U'=119, P=0.457).

3.3. Correlation between the nuclear grade, the pathological stage and surveillance

Comparison between the nuclear grade and the pathological stage (Table 2) showed a positive significant correlation (r=0.565, P=0.0001).

Table 2. Correlation between the nuclear gradeand the pathological stage

	Pathological stage			
Nuclear grade	r = 0.565	P=0.0001		

A negative non-significant correlation of a weak scale has been shown between the pathological stage and DFS (r=-0.216, P=0.250), between the pathological stage and PFS (r=- 0.288, P=0.406), (Table.3), as well as between the pathological stage and CSS (r=- 0.283, P=0.556).

Table 3. Correlation between the pathological stage and surveillance in terms of DFS, PFS & CSS

	Pathological stage		
DFS	r =-0.216	P=0.250	
PFS	r =- 0.288	P=0.406	
CSS	r = -0.283	P=0.556	

The tumor nuclear grade and PFS resulted with a negative significant correlation of a strong scale (r=-0.808, P=0.007) (Table 4). Comparing the tumor nuclear grade and CSS there have been gained a negative non significant correlation of a high grade (r=-0.715, P=0.08), whereas the tumor nuclear grade and DFS has not resulted with a correlation (r = -0.02, P=0.909).

Table 4. Correlation between tumor nuclear gra-de and surveillance in terms of DFS, PFS & CSS

	Nuclear grade		
DFS	r =-0.02	P=0.909	
PFS	r = -0.808	P=0.007	
CSS	r =-0.715	P=0.08	

3.4. Correlations between MVD and other parameters

A negative non-significant weak scale correlation has been shown between MVD and the tumor nuclear grade (r=-0.132, P=0.415); MVD and necrosis (r=-0.304, P=0.055), whereas a negative non-significant correlation of a very weak scale was detected between MVD and tumor size (r=-0.09, P=0.578); MVD and pathological stage (r=-0.03, P=0.817), as well as between MVD and hemorrhage (r=-0.01, P= 0.9.3) (Table 5). A positive non-significant correlation of a very weak scale was detected between MVD and DFS (r = 0.182, P=0.334); between MVD and PFS (r = 0.162, P=0.653) as well as between MVD and PSS (r = 0.160, P=0.731).

Table 5. Correlations between MVD and other prognostic factors

	MVD	
Tumor size	r = -0.09	P=0.578
Nuclear Grade	r = -0.13	P=0.415
Pathological Stage	r = -0.03	P=0.817
Hemorrhage	r = -0.01	P=0.903
Necrosis	r =-0.30	P=0.055
DFS	r = 0.182	P=0.334
PFS	r = 0.162	P=0.653
CSS	r = 0.160	P=0.731

4. Discussion

The importance of angiogenesis for the tumor growth and metastasis, originally postulated in 1971 by Folkman, has been confirmed in a variety of systems. Tumor angiogenesis has been well documented both in experimental and clinical studies, and the degree of angiogenesis was closely associated with tumor progression and shorter patient survival in many types of cancers [¹⁶,¹⁷], whereas data for RCC are controversial [18]. Tumor angiogenesis was reported to be the only significant predictor of prognosis in low stage RCC [19], however, angiogenesis was not related to the tumor malignancy or patient survival of RCC in another study [20]. Although the related angiogenic factors are intensively investigated in various tumors, determination of microvessel density (MVD), a measure of the degree of angiogenesis, is one of the most examined parameters for angiogenesis in cancers.

The assessment of tumor MVD has been reported as a prognostic indicator in several human malignancies. Specifically, studies have shown that higher tumor vascularity correlates with worse patient outcomes in breast [²¹], prostate [²²], and ovarian cancers [²³]. To date, studies assessing the prognostic value of MVD in CRCC have shown conflicting results [²⁴]. Maclennan and Bostwick [²⁵] and Sandlund *et al* [^{YV}], both concluded that the extent of angiogenesis has no prognostic significance in relation to patient survival. On the other hand, Yoshino *et al* [^{YV}] and Nativ *et al* [^{YA}] found that the increased MVD was a poor prognostic factor associated with shorter survival. It is believed

We have found in our study that the average value of MVD in patients with CRCC was higher than in normal kidney tissue. The Mann-Whiteny test has shown a difference with an important statistical significance between values of MVD regarding two groups (U=699, P<0.0001). Our results have shown that in patients with a tumor size < 40 mm the average value of MVD was 133.8, whereas in patients with a tumor size from 40 to 70 mm the average value of MVD was 114.2; and in patients with a tumor size > 70 mm the average value of MVD was 95.1. Our results have shown that there is a negative non-significant correlation between MVD and tumor size (r =-0.09, P=0.578). Yoshino et al. [18] in their study concluded non significant correlation between tumor size and other prognostic factors. Analysis of the survival rate based on tumor size revealed that patients with a small tumor tended to show a good prognosis, but no significant difference was found in the prognosis between medium-sized and large-sized tumor groups. Analysis of all patients only MVD was a significant prognostic factor (P=0.003). Tumor size cannot be readily justified as a determinant of prognosis in patients with medium- or largesized tumors. In patients with low-stage tumors, microvessel count served as the only significant determinant for prognosis.

We have found that the mean value of MVD in patients with CRCC tumor nuclear grade 2 was 118.3 (DS \pm 82.1) and the mean value of MVD in patients with CRCC tumor nuclear grade 3 and 4 was 94.7 (DS \pm 66.1). We have not recorded any difference with an important statistical significance between values of MVD in relation to the tumor nuclear grade (T=0.945, P=0.350). As we can see in our results, the MVD of CRCC showed a negative correlation with the Fuhrman nuclear degree. In accordance with our data, Mac Lennan at al [29], and Nativ et al [30] in their studies concluded an inverse correlation between MVD and tumor grade in the same tumor. These findings could be due to a relative decrease of vascular dependence of cancer cells, and this is associated with features of increased malignancy [31,32]. The tolerance of hypoxic conditions can explain why renal tumors with high-

Fuhrman grade can afford an increased intercapillary distance in comparison with low-Fuhrman grade [33]. These differences in angiogenesis biology might have impact on the antiangiogenic treatment effect on clear cell RCC. Moreover, Klatte et al. [34] found that Fuhrman grade should be the standard grading system for papillary renal cell carcinoma, because it provides independent prognostic information. On the other hand, Kavantzas et al. [35] found a positive correlation between a high MVD and a high tumor grade in renal cell carcinoma. Moreover, mean value of MVD in patients with CRCC pathological stage I and II was 115.7 (DS± 81.5), and the mean value of MVD in patients with CRCC pathological stage III and IV was 99.1 (DS± 68.8). But, the difference of MVD in relation to the pathological tumor stage, using the unpaired T-test, did not show any important statistical significance (T=0.660, P=0.350). As we can see in our results, the MVD of CRCC showed a negative correlation with the pathological stage.

Tumor nuclear grade and pathological stage are the most important prognostic factors in CRCC. In our study, the tumor nuclear grade and the pathological stage showed a positive significant correlation (r=0.565, P=0.0001), (Table 2). Moreover, survival analysis showed a negative non-significant correlation between the pathological stage and DFS (r=-0.216, P=0.250); between the pathological stage and PFS (r=-0.288, P=0.406), as well as between the pathological stage and CSS (r=-0.283, P=0.556). On the other side, survival analysis between the nuclear grade and PFS results with a negative significant correlation of strong scale (r-0.808, P=0.007). Comparing the nuclear grade and CSS we have gained a negative nonsignificant correlation of a high grade (r=-0.715, P=0.08), whereas analysis between DFS and the nuclear grade did not result with a correlation (r =-0.02, P=0.909) (Table 3).

Te degree of angiogenesis in primary CRCC had prognostic significance. Surprisingly, high levels of MVD were associated with better DFS (r=0.182, P=0.334), better PFS (r=0.162, P=0.653) and better CSS (r=0.160, P=0.731), (Table 5). Swethajit and al. [36] conclude in their study that high levels of CD31 were associated with a better cancer-specific survival (CSS) and overall survival compared with low levels. Our finding that

a high CD31 is associated with a better overall survival in primary CRCC could suggest that the functional status of the tumor vasculature possibly has to be considered as part of the stratification of antiangiogenic therapies in patients receiving such drugs as part of clinical trials in the perinephrectomy setting. An immature tumor vasculature is thought to be more susceptible to antiangiogenic interventions biological and functional imaging biomarkers will need to be identified that can discriminate those patients with immature vasculature tumors versus those patients with tumors that have mature vessels (high CD31 expression) [36].

Our results have shown that there is a negative non-significant correlation between MVD and presence of tumor necrosis (r=-0.304, P=0.055) and between MVD and presence of tumor hemorrhage (r=-0.01, P=0.93).

In conclusion, this study has shown that the mean MVD in patients with CRCC was higher than in normal kidney tissue at the statistically significant level. High MVD has been associated with smaller tumor size, lower nuclear grade, lower pathologic stage, lower degree of tumor necrosis, but not at the statistically significant level. On the other hand, increased MVD has been associated with better outcomes and better overall survival in CRCC.

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Pattern Presentation to Improve the Health Care Quality of Yazd Withdrawal Centers Using Seruqval and Vikor Model

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Abstract

Background: Among service agencies, health and medicinal services provider play critical role in society and the weakness in the quality of services represent in these organizations in addition to customer dissatisfaction could have irreparable consequences. Withdraval centers as well as one of the organizations in this category not excepted of this rule. Therefore in this paper we surveyed the quality of withdrawal centers medicinal services of Yazd using Seruqval and Vikor model.

Methods: first we review the literature questionnaire of measuring quality of withdrawal centers services in accordance with Seruqval model is done and after validity and reliability approval were distributed in the statistical community. Then in order to determine the priority of improving the quality of withdrawal centers services, Vikor model used in order to determine the priority of each of the Seruqval model from the perspective of clients.

Findings: the results of this study showed that among five Seruqval dimensions three dimensions such as tangible factors, reliability and empathy had negative gap, while the with gap in two dimensions such as responsive and security is not expressive. Also among the 22th indexes Seruqval model, most negative gap related to the being attractive indexes of equipment and facility the center. Prioritize results indexes showed "quick and without all retardation services "among all the indexes has the most priority.

Conclusion: since the quality of services in two dimensions, accomplished the expectations of patrons but tangible factors dimension have been more inappropriate than other dimensions, considering the equipment and the look of these centers can satisfied the patrons.

Key words: measuring quality, health care, Seruqval, Vikor, withdrawal centers

Introduction

Although quality is widely regarded in the field of manufacturing and industry, in the service part because of its main feature, the intangible nature and integral part of the production of consumption process, it has been less regarded [1]. It is clear that the services quality assessment of , could increase services representation efficiently: because the organization knows demands and needs of the applicants, in order to promote its services and of nonessential services or to remove them[2]. However, the service sector of healthcare sector have a special place, because any mistake in this part can have disastrous outcomes. In addition, too much emphasis on quantitative indexes in the health-care evaluation cause function shrinkage and lack of motivation to promote their health care processes [3]. Therefore, to address the concept of quality in health care in developed countries due to the better education of patients and succor and costs enhance, has found new meaning for this type of service providers [4]. Review of the research literature indicates that several tools used to assess the quality of services in various sectors, but perhaps one of the most common and of course the most suitable tools in this area is serugual model[5].

Seruqval model asses' services quality in 5 dimensions such as tangibility, reliability, responsiveness, empathy and assurance [5]. That is to survey customer expectations measurement in every dimension and compares that with their perceptions of the quality of services received. Service quality is acceptable if the perception level is higher than expectations; otherwise the quality is weak in this dimension and needs improvement. Seruqval model is one of the most popular tools in the assessment of quality of health services [6] and used increasingly in this course [7].

Mohed sooky et al study on the three private health-care Center in a region of Malaysia using serukval model, decided to answer the question that whether the perceptions of patients of the services provided in private health care centers meet their expectations or not? The results indicate the negative gap in all aspects related to the quality of service provided and patients dissatisfaction of service representation in these centers and related components of responsiveness have the most gaps in other components [8].Mohamad Butt and Cyril D.Ran accomplish a study to assess the performance quality of private health care centers in Malaysia by the Seruqval model. They found by the study on clients to these centers in all five dimensions of service quality, the negative gap exist between clients expectations and perceptions that the maximum gap is related to the physical and concrete dimension. They also have a scale for measuring the quality of service provided by private health care centers in Malaysia that had the wider scope of the usability and the health performance policy and more functional [9].

Resnik and grifits accomplish a study in 2009 on a alchohol withdrawal clinic in England using Seruqval model to assess the quality of alcohol withdraval. They measured the expectations and perceptions of service quality from the perspective of both patients and clinic staff. Their results showed that the client's expectations are met in all five dimensions other than the reliability, and the gap, has a positive aspect. But the results are slightly different of the clinic staff so that staff expectations are met only with tangible factors and observed negative gap in the four dimensions. They also showed that the Seruqval model is an appropriate tool to assess the methodological quality of services in this field [10].

Ranjbar et al accomplish a study to analyze the gap between expectations and perceptions of clients using the Seruqval model in Afshar Hospital of Yazd. Their research results showed that the expected quality and perceived quality of them include tangible gap and in all dimensions, perceived quality is less than expected quality of patients. This gap exist in two dimensions are tangible and responsiveness of stuff and more than other dimensions [11].

Vykur model of prioritizing alternatives models is the appropriate model for multi-criteria scheduling issues are. Considering that the aim of the present research is to prioritized 22 index of Seruqval model and using clients reviews so utilize the multicriteria decision making model for the prioritization will be the perfect solution. Therefore, in this study the model Vikor the most popular models in multicriteria problems solution are used.

Therefore, in the present research, regarding the importance of the quality and its measurement in the health services sector the quality assessment of withdrawal centers of Yazd is using Seruqval model is exerted. In addition by using vikor model the priority of each of the Seruqval dimensions and indexes from the perspective of clients is determined.

Methods

Research tools

In the present descriptive and analysis study firstly the Seruqval model was used to measure services quality gap. This model compares client's expectations of service before receiving the actual services [12]. To determine which of the activities of the service need to be improved [13]?

Seruqval model have 5 main dimensions such as physical and tangible dimensions, reliability, responsiveness, assurance and empathy [5] and each of these dimensions measured by certain components that all the five dimensions are able to assess by 22 General components. In order to assess the quality of services by this model, each components assessed by a scale of 5 or 7 ranking from strongly agree to strongly oppose, and in every dimension, the extent of the gap between the actual services provided to the customer and that customer expectations are calculated [7]so The questionnaire research consists of 22 questions for a total consideration of each of the measures about the good status as well as the current status of each of the five dimensions of Serukval model in the form of about 5 choices of Liker-type range from very opposite 1 to very agreed (5)measured.

In this research for prioritization criteria Vikor model is used. Vikor model is a method for multicriteria methods optimization of complex by aprikvich for appropriate choice among alternatives by Prikvich in (1998) was presented [14]. in Vikor model Rank variable compensation with compare to the closeness to the ideal option through the rank process and faction selecting of options in terms of the conflicting criteria is done. Vikor model is an efficient tool for multi-criteria decision making particularly in situations where the decision maker is not sure of their preferences [14], [15].

Validity depends to the content was used In order to assess the questionnaire. To this end, questionnaires were given to the masters and after correction, its validity was confirmed. In order to asses' reliability degree of the questionnaire Cronbach's alpha, the usual method was used. Firstly, 40 questionnaires were distributed among the research community and the review of the 34 returned questionnaires, the coefficient of Cranach's alpha was computed in SPSS at the .867 expectations aspect and perceptions aspect of the value of 0.902. This amount is sufficient to confirm the reliability of the questionnaire.

Society and Sample

Since the present research was carried out in Yazd all the clients of the withdrawal centers of the city that is at least two months from the date of the first visit selected as the statistical community of this research. In this context we referred to Yazd central department of Medical Sciences University of shahid sadoghi, a complete list of withdrawal centers were reported 69 centers during this study. Since the population was infinite the sampling formula to determine the sample size was unlimited. For this purpose, for a preliminary sampling, sample size was estimated 233 people. But to raise research accuracy 250 person selected as a sample questionnaires were distributed among subjects who completed the questionnaires were distributed among which finally 237 questionnaires were returned and analyzed.

Results

The results of the vilkakson test showed in responsive and confidently dimensions tests in 95 percent assurance level are not expressive and it was clear that no meaningful difference between expectations and perceptions exist and perceptions to a great extent has not met expectations. In other dimensions tests at the level 95 percent are meaningful that the difference between the meaningful perceptions and expectations below the expectations and services offered in the withdrawal centers has not been able to met clients expectations. Table 1.

As shown in Table 1 in three dimensions of Seruqval model, negative gap between client's expectations and perceptions of withdrawal center services exist. So that the maximum gap was related to tangible factors dimensions and less negative gap is allocated for empathy.

Table 2 shows suggestion of a more detail of each of the 22 indexes divided into five dimensions of Seruqval model. As we have seen, apart from all the indexes have negative gap in and expectations allocated higher level of perceptions. Naturally, there are three factors with a positive gap in the responsive dimension has led to lack of significant gap, and even the perceptions level exceed expectations to a certain extent. Most negative gaps indexes "attractive appearance center equipment and facilities" and" upgrade and new equipment of the center" is related to the tangible factors. It is a proof that tangible factors have the most noticeable gap of all the gaps. The noticeable point in this regard is that although the average expectations in these two indexes compared to other indexes in the lowest le-

Dimensions	Perceptions average (P)	Expectations average (E)	Gap (G)	Test statistic (z)	The significance level (sig)
Tangible factors	3.956	4.318	-0.362	-3.426	0.006
Reliability	4.268	4.463	-0.195	-3.370	0.004
Responsiveness	4.47	4.433	0.037	-0.041	0.942
Assurance	4.553	4.575	-0.022	-0.069	0.853
Empathy	4.473	4.572	-0.099	-2.907	0.000

Table 1. Results of the Wilcoxon test and five dimensional gap analyzes of Seruqval model

vel but performance in this index are compared to the index of the other has been so low that even this Low Expectations also has not met and the highest amount of gap between all of the indexes has been allocated to this two indexes.

Another thing that is deducted from Table 2 is the average of high perception that all indexes gains compared to other similar studies. A quick look to this matter shows that average perceptions to all the criteria is above four. This point shows that large number of clients satisfied of how performed method and the point 5 allocated to the index Likert spectrum. This leads level gaps in this study report lower than many similar studies. The fracture surface is. Also Minimum negative gap was related to the "employee's knowledge and skills in response of clients need 'index of Assurance index.

Then in order to identify priorities for improving quality of withdrawal centers of Yazd indexes 22th serokval model rank by with tools ranking by vikor that is one of the common techniques of multi-criteria (MADM) decision making. So initial Vikor matrix formed and the main stages of this technique done step by step. Final results extracted in table 3 that shows priority of 22 quality index.

As seen "quick and promptly services "Index in all the indexes has the higher priority. In other words the most important factor for clients to withdrawal centers is the speeding element in presenting service due to the special conditions of clients refer to this centers these result could not be expected. Also the index of the "special attention to each clients of the center employees", "availability of staff referred on the need and demand of clients", "feel secure and relax when calling employees", "properly service accomplish by the staff at the first presentation" settled in second to fifth degrees of importance respectively.

Therefore, the initial matrix formation and Vikor main steps techniques step by step got. The final results in Table 3 were extracted from the first 22 shows a qualitative index.

Index	Row	Indexes	Perceptions	Expectations	Gap
	1	Employees adornment and cleanliness	4 68	4 659	0.021
a s 2 Hygiene and neatness of center environn		Hygiene and neatness of center environment	4.148	4.396	-0.248
ang acto	3	Attractive appearance of center facilities	3.501	4.176	-0.675
	4	Center updated and new equipments	3.497	4.042	-0.545
λ	5	Accomplish tasks by the employees in accordance with commitments given	4.119	4.335	-0.216
l ilit	6	Having interest in accomplish tasks and render services	4.341	4.54	-0.199
liab	7	Properly service accomplish by the staff at the first presentation	4.495	4.581	-0.086
Re	8	Perform services on time by the staff	4.049	4.32	-0.271
	9	Maintain accurate records and files of clients	4.337	4.543	-0.206
ess	10	Inform and announcement of the exact time to serve clients	4.341	4.446	-0.105
siven	11	Quick and promptly Services	4.7	4.638	0.062
suods	12	Permanent staff eager to help clients	4.291	4.287	0.004
Re	13	Availability of staff referred on the need and demand of clients	4.547	4.361	0.186
e	14	Client trust to the staff	4.611	4.701	-0.09
ranc	15	Feel secure and relax when calling employees	4.476	4.553	-0.077
INSS	16	Knowledge and skills of staff In response to clients	4.41	4.425	-0.015
A A	17	Employees courtesy and humility	4.718	4.621	0.097
	18	Special attention of center's staff to each of the attending clients	4.692	4.814	-0.122
athy	19	Center suitability working hours	4.272	4.398	-0.126
np:	20	Special attention to clients values and emotions by staff	4.509	4.632	-0.123
Ē	21	Center's staff heartfelt fondness to clients	4.393	4.343	-0.041
	22	Understand the specific needs of clients by staff	4.499	4.582	-0.083

Table 2. Related results of the gap analysis of each of the Seruqval model indexes

Table 3.	Ranking t	the 22	quality	indexes	of	Seruqval	model
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Indexes	Q_i	Grade
Quick and promptly Services	0	1
Special attention of center's staff to each of the attending clients	0.14578	2
Availability of staff referred on the need and demand of clients	0.16324	3
Feel secure and relax when calling employees	0.16891	4
Properly service accomplish by the staff at the first presentation	0.18004	5
Client trust to the staff	0.20762	6
Knowledge and skills of staff In response to clients	0.23765	7
Employees adornment and cleanliness	0.31286	8
Understand the specific needs of clients by staff	0.38520	9
Perform services on time by the staff	0.44542	10
Special attention to clients values and emotions by staff	0.48995	11
Employees courtesy and humility	0.53756	12
Center's staff heartfelt fondness to clients	0.59751	13
Accomplish tasks by the employees in accordance with commitments given	0.67002	14
Having interest in accomplish tasks and render services	0.68150	15
Center suitability working hours	0.71163	16
Hygiene and neatness of center environment	0.75159	17
Permanent staff eager to help clients	0.76814	18
Inform and announcement of the exact time to serve clients	0.81042	19
Maintain accurate records and files of clients	0.83140	20
Attractive appearance of center facilities	0.87851	21
Center updated and new equipments	0.89120	22

Table 4. Ranking indexes in each dimension

Tangible factors dimension		
Employees adornment and cleanliness	1	
Hygiene and neatness of center environment	2	
Attractive appearance of center facilities	3	
Center updated and new equipments	4	
Reliability dimension indexes		
Properly service accomplish by the staff at the first presentation	1	
Accomplish tasks by the employees in accordance with commitments given	2	
Maintain accurate records and files of clients	3	
Having interest in accomplish tasks and render services	4	
Maintain accurate records and files of clients	5	
Responsiveness index indexes		
Quick and promptly Services		
Availability of staff referred on the need and demand of clients		
Permanent staff eager to help clients		
Inform and announcement of the exact time to serve clients		
Assurance index indexes		
Feel secure and relax when calling employees		
Client trust to the staff		
Knowledge and skills of staff In response to clients	3	
Employees courtesy and humility	4	
Empathy dimension indexes		
Special attention of center's staff to each of the attending clients		
Understand the specific needs of clients by staff		
Special attention to clients values and emotions by staff	3	
Center's staff heartfelt fondness to clients	4	
Center suitability working hours	5	

As can be seen index "quick and without delay" service among all indexes are higher priority. The indexes "give special attention to each one who visits the staff", "special attention to each of the attending staff," "availability of staff referred to the need and demand," "sense of security referred to tranquilizer and during contact with employees "and" do the job correctly the first visit by the staff ", respectively, in the second to fifth grades were important.

In addition, the ranking of the indexes in each of the five dimensions of Seruqval model were also determined. Table 4 Show factor rank in each dimension. As can be seen the "employees adornment and cleanliness" index in tangible factors, "properly service accomplish by the staff at the first presentation" in the reliability dimension, "quick and promptly Services" in responsiveness index, "feel secure and relax when calling employees" in the Assurance index, "special attention to clients values and emotions by staff" in empathy dimension, won the first place. Ranking The indexes in each of the aspects are good guide for withdrawal centers to promote the level of quality services in dimensions that have negative gap, and more consent the clients.

Discussion

The main research goal centers present measurement of service quality withdrawal center of Yazd done by serukval model. The research showed negative gap in tangible factors, reliability and empathy. While in the Reliability and responsiveness had no meaningful gap and clients expectations fulfilled different from similar research that it has been pointed in the research literature(8-11). Although having no gap in this two dimensions correspond with the results achieved in risnik and grifits research but negative gap in tangible factors and eempathy contradicts with the former research results. The results also showed that in the 22 serukval model index only employees adornment and cleanliness, quick and promptly Services, permanent staff eager to help clients, on the need and demand of clients and employees courtesy and humility have negative gap and did not meet the expectations. It should be mentioned that of the above five index three index related to responsiveness and caused a better status for this dimension than the others. While according to results study of ranjbar et al in stuff tangible and responsiveness dimensions have more gap than the other dimensions(11).

The results related to the indexes prioritization showed that the "quick and promptly Services" is related to responsiveness," special attention of center's staff to each of the attending clients "related to empathy," on the need and demand of clients "related to responsiveness of all indexes respectively have the most priority from the clients perspective. In addition results related to ranking indexes in each of dimensions were done.

Conclusion

The results showed the highest negative gap related to tangible factors and then the least negative gap related to empathy dimension. On the other hand among the indexes are the most negative gap respectively" attractive appearance of center facilities"," center updated and new equipments", indexes related to tangible factor. Since most active centers in the province are governmental this result could show lack of attention of respective managers to apparent issues. Although this action could be efficient in line with reducing costs related to these centers but obviously cause clients dissatisfaction. As far as the quality of other dimensions in more suitable and even in two dimensions meet client's expectations considering these centers apparent space equipment can more satisfied the clients.

In the other research sector; in order to determine the priorities improve the quality services for withdrawal centers for managing this centers, indexes priority in general and it was followed in each of the dimensions separately determined. The results showed that the" quick and promptly Services", index have higher priority of all the indexes. In other words the most important factor of withdrawal centers clients speed factor in service presented that due to special conditions of clients this results was unexpected. It is natural that centers manageress to the primitive priorities plays a great role in promoting clients consent to these centers and to encourage them to reference those as much as possible in order to complete cure course. Also determining the priority indexes in each of the dimensions showed that" employees adornment and cleanliness" in tangible factors dimension index," properly service accomplish by the staff at the first presentation" in reliability dimension index ,quick and promptly Services" in responsiveness dimension index ," feel secure and relax when calling employees "in assurance dimension index and "special attention of center's staff to each of the attending clients "in empathy dimension index gain the first priority. The results will be good guide for the managing withdrawal centers to promote the level of services quality in negative gap dimensions, and win the most clients consent. This research proposal for future research identified characteristics of service and then identifying key operations of process of centers services withdrawal centers by using tools like QFD.

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Nursing care in liver transplantation: case report

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Introduction

Liver transplantation is the sole life-protecting and life-maintaining treatment method that is suggested for patients with a end-stage liver failure that threatens life and cannot be treated with other treatment methods today [1,2]. Liver transplantation is the process of exenterating a part of a liver tissue with normal functions from individuals who either have brain death or are completely healthy and replacing it with the unhealthy liver tissue of cases with a chronic liver disease or acute fulminant failure. The first organ transplantation from a cadaver was performed by Starzl at Colorado University in 1963; however, the survey failed to remain as long-term and as a result of the ongoing relevant studies, the first transplantation with a long-term survey was realized by the same team in 1967 [3]. However, due to the limited number of cadavers for transplantation, it became required to develop new methods and the first transplantation from a living donor was realized by Smith [4]. In Turkey, on the other hand, the first liver transplantation was performed by Haberal et al. in 1989 [5].

Developments in the immunosuppressive treatment regime, advancement of the techniques of protecting the organs to be transplanted, as well as the antiviral treatment applications and the determination of convenient donor criteria have considerably increased the one-year lifetime following the liver transplantation [6,7]. However, patients face with great problems in the long-term after the transplantation. These problems are as follows (Table 1): [6-8].

One of the most important factors in the transplantation success is the immune response of the recipient to donor's tissue [9,10]. Tissue incompatibility between the *recipient* and the donor increases the risk of rejection [9,11]. Rejection is a complication that develops as a result of the increase of the plasma creatinin concentration, emergence of proteinuria and hypertension and becomes clearer with the gradual impairment of graft functions [9,12,13]. Nurses have important duties in the follow-up of rejection, infection symptoms, vital signs and fluid-electrolyte balance, application of the immunosuppressive treatment and follow-up of its effects, procurement of psychological support and in the perioperative training of patient and their families [9,14-16].

In transplantation practices, it is important to not only transplant the organ, but also provide the best care for both the donor and the *recipient* and bring their life quality to the most appropriate level in the following period. Thus, nurses who take charge in various stages of transplantation operations that require a highly complex and risky surgical intervention take important responsibilities [6,17].

Immunosuppression related complications	Rejection, infection, malignancy, cardiovascular risk factors and hypertension
Liver transplantation associated psychological problems	Anxiety and fear, fear of death, fear of rejection or infection
Non-adherence to the medical treatment regime	An explanation should be made about the relationship between the adherence to treatment and suggestions and the success of transplantation
Redevelopment of the liver disease	Develops at the rate of 75% and 90% in patients that do not have a Hepatitis B prophylaxis
Neurological complications	Seizure, cerebellar syndrome, consciousness changes, metabolic and toxic encephalopathy
Other problems	Weight gain Cosmetic factors

Table 1. Problems encountered following the liver transplantation

This report was prepared in order to help nurses, working at transplantation centres, in the nursing care regarding the problems that develop following the liver transplantation.

Case Report

Recipient: B.K., a male patient born in 1961, who was identified with HCV positivity during blood donation to the Red Crescent in 2005 and had history of an antiviral treatment, was diagnosed with cirrhosis in 2008 and with hepatocellular carcinoma 5 months before the liver transplantation.

- Height: 182 cm, Weight: 88 kg, BMI: 26.6 kg
 / m, B Rh (+)
- No history of encephalopathy and GIS bleeding. No feature in family history.
- Applied to the hospital with the complaints of yellowing in eyes and swelling on the left foot and abdomen 10 months before. Have constant coughs for 2-3 months and a little respiratory disorder (Effort capacity 3 staircases)
- CHİLD (Child-Pugh) B
- MELD (Model for End-stage LiverDisease) 13

Preoperative examinations like the blood group, tissue group, blood tests and endoscopy were performed for B.K. Besides, the cardiology, teeth, social service, psychiatry and immunology consultations were completed. Blood pressure, pulse, height, and weight were also measured and recorded.

Pre-op Abnormal laboratory findings:

• Glucose 113 (H), Creatine 0.52 (L) Albumin 2.8 (L), Total bilirubin 25.2 μ g / dL (H), Direct bilirubin 1.65 (H), Calcium 8.25 (L), CRP 2.8 (H), Leukocyte 3,200 / mm3 (L), Erythrocytes 3.980 million / mm 3 (L), Platelets 66,000 / mm3 (L), Neutrophils 1940 (L), Hemoglobin 11.1 (L), Hematocrit 35.9 (L), ALT 51 (H), AST 61 (H).

Right hepatectomy was performed to the case that developed KC-S (HCC) caused by HCV from a living donor (Graft weight 680 gr).

Donor: H.N., a male patient born in 1984, completed his preoperative examinations like blood group, tissue group, blood tests, hepatitis indicators, chest radiography, ECG, abdominal ultrasonography, and tomography. Besides, the social service, psychiatry and immunology consultations

were completed. Blood pressure, pulse, height, and weight were also measured and recorded.

• Height: 165 cm Weight: 55 kg, BMI 20.2 kg / m, O Rh (+).

Discussion

We applied and evaluated the postoperative care plan of the plan, which was developed for the *recipient* and donor that were accepted in the Organ Transplantation unit one day after the wake-up unit of the Department of Anesthesiology and Reanimation. The care plan included the common diagnosis (to be evaluated by the healthcare team) and the nursing diagnosis (available and possible problems).

Post op 0 Vital findings:

- Fever 37.6 °C, pulse 94 / min, breathing (mechanical ventilator support) 24 / min, blood pressure 145/65 mmHg.
- Following the operation, the patient had one drain on the right and two drains on the left, NG catheter, Foley catheter and catheter IV.

Postoperative abnormal laboratory findings:

Glucose 463 (H), Creatine 0550 (L), Albumin 1790 (L), Total bilirubin 4: 58 μ g / dL (H), Direct bilirubin 1.84 (H), Calcium 7.28 (L), Leukocytes 2,090 / mm3 (L), Erythrocytes 3.120 million / mm 3 (L), Platelet 33,000 /mm3 (L), Neutrophils 79 900 (N), Hemoglobin 10.9 (L), Hematocrit 27.7 (L), ALT 192 (H), AST 133 (H), PT 26630 (H), INR 2470 (H), APTT 47 390 (H).

Post op 0th Day Treatment Management

Tazocin 3x4.5 gr IV, Flukanazol 1x400 mg IV, Targocid 1x450 mg IV, Prednol 4x100 mg IV, Prograf tb 2x2 mg PO, Contromal 3x100 mg IV, Asist süs. 2x1 IV, Metpamit 4x1 IV, Bactrim tb 1x1 PO, Mikostatin 4x20 gut PO, Losec 2x1 IV, %20 Human Albumin 2x400 mg IV, %0.45 NaCl 80 cc/h IV.

Postoperative nursing care plan practices and evaluations; common diagnoses and nursing diagnoses; available and possible problems:

1. Bleeding risk (common diagnosis/possible problem): The most important risk factors for postoperative bleeding include the severe preoperative coagulopathy and thrombocytopenia [18]. Elongation during the prothrombin and partial prothrombin, constant lower platelet count, decrease in the hematocrit and haemoglobin level, hypotension, tachycardia and increase in the pulse pressure are among findings to be taken into consideration for bleeding [19].

Etiology

- Deficiency of coagulation factors
- Thrombocytopenia (33.000 mm³)
- Postoperative 1st day
- Presence of drains

Expected Results

- Developing no bleeding findings
- Having normal platelet, coagulation time, haemoglobin and hematocrit levels
- Knowing and applying the protection ways against trauma

Nursing Management

- Follow up of the area of incision and drain
- Follow up of the bleeding
- Follow up of vital findings
- Follow up of the consciousness
- Assisting in daily life activities
- Follow up of the intake/outtake
- Follow up of the shock
- Follow up of the arterial blood pressure
- Follow up of the treatment efficiency
- Having information about all processes
- Preventing the constipation
- Discharge Training

No postoperative bleeding symptoms and findings were observed in the patient. Foley catheter and drains were removed on the postoperative 10th day.

2. Acute pain (available problem): One of the most important problems that develop following the liver transplantation is the pain control. However, the use of tranquilizers and antidepressants in the treatment of anxiety and depression that develop as a result of the chronic disease in majority of patients before the operation obstructs the postoperative pain control [20]. Analgesics are used to prevent the pain caused by surgical incisions, drains,

vascular catheters and endotracheal aspiration [21]. The most reliable criteria indicating the pain density for the pain control is the classification of pain in a scale between 0-10 either visually or verbally. In the early postoperative period where the liver functions are only on limit, the use of narcotic analgesics and extreme sedation may cause a number of problems. In addition, since nonsteroidal antiinflammatory drugs decrease the renal blood stream and cause serious gastrointestinal side effects, analgesic drugs should be selected very carefully [22].

Etiology

- Postoperative 1st day
- Presence of drains

Expected Results

- Stating that the pain has decreased

Nursing Management

- Follow up of vital findings
- Follow up of the area of incision and drain
- Evaluating the pain (8)
- Administering analgesics according to physician's request
- Observing the side effects of drugs and treatments
- Informing the patient about the disease and drug effects
- Providing and supporting sufficient mobilization
- Assisting in daily life activities
- Observing the pressure points
- Teaching the relaxation techniques
- Applying massage

Analgesics (Contromal 3*100 mg), which are involved in order 8 of pain density with numerical pain scale (0-10), were administered as IV in postoperative 1st day. Methods outside of drugs were also used in decreasing the pain (providing the mobilization, making an appropriate position, preparing a quiet environment away from noise). The patient's pain was taken under control on the second day (pain score 3). On the following days, the pain control was sustained with the numerical pain scale.

3- Risk of Inefficacy in the Respiratory Function (common diagnosis/possible problem): Respiratory complications are one of the most important reasons of mortality and morbidity following the liver transplantation. In the study of Golfieri et al., it was determined that 86.7% of patients developed a lung complication following the liver transplantation and 13.7% of them were pneumonia [23].

Etiology

- Postoperative 1st day
- Presence of drains
- Pain in the area of incision
- Ineffective cough
- Insufficient mobilization

Expected Results

- Having a normal breath rate and oxygen saturation
- Having an effective and easy respiration

Nursing Management

- Follow up of vital findings
- Opening the airway
- Providing and supporting sufficient mobilization
- Evaluating the pain
- Administering analgesics according to physician's request
- Teaching and making deep breath and cough exercises
- Evaluating the lung sounds and following up the respiration
- Teaching how to use the spirometer and follow the practice
- Following up the oxygen saturation and if necessary, providing the oxygen support
- Making an appropriate position
- Following up the skin, nail and mucous membranes

Sufficient mobilization and pain control were provided. Number of respirations: 16-20 mn., SPO2: 95-100.

4- Infection Risk *(possible problem):* Infections are one of the most important reasons of mortality and morbidity following the liver transplantation, just like in all other transplantations [24]. Infections that emerge within the first six months following the liver transplantation are called as the early period infections [25]. The most important infections observed in this period include cytomegalovirus

(CMV), Epstein-Barr virus (EBV), varicella zoster virus, human herpes virus-6 (HHV-6) and viral infections caused by adenovirus. CMV infections are encountered in 30-70% of transplantation patients and almost half of them are symptomatic. One of the most important effects of CMV infections is the allograft rejections. The incidence of fungal infection following the liver transplantation varies between 5-40% and 80% of these infections develop within the first two months. Fungal infections are most frequently caused by *Candida* and there may also be opportunistic fungal infections with a very high mortality, such as aspergillosis, cryptococcosis and *Pneumocystis carinii* [26].

Etiology

- Surgical procedures (Kc Transplant)
- Invasive interventions
- Catheters and drains
- Immunosuppressive treatment

Expected Results

- Knowing the risk factors about infections and taking necessary precautions to be protected from infections
- Being protected from hospital infections during the hospitalization

Nursing Management

- Aseptic technique in all kinds of procedure
- Mouth care
- Following up the leucocyte level
- Making deep breath and cough exercises to prevent the pneumonia
- Preparing the food under convenient hygienic conditions
- Prohibiting visits
- Providing and sustaining the personal hygiene

The patient was observed in terms of infection symptoms and no infection symptoms were determined during his hospitalization in the transplantation unit. We applied the prophylactic antibiotic treatment. Body temperature 36.5-37.5°C, leucocyte: 5.2 thousand.

5- Risk of rejection (common diagnosis/possible problem): Hyperacute, acute or chronic rejection could be observed in patients who have liver transplantation. *Hyperacute rejection*; characterized by injuries, parenchymal haemorrhage and thrombotic obstructions in graft veins. Develops on the first days of transplantation.

Acute rejection; generally develops one week after the transplantation.

Chronic rejection; may develop months and years after the transplantation and is the most important reason of graft failure [27].

Etiology

- Surgical procedures (Kc Transplant)

Expected Results

- No development of rejection.

Nursing Management

- Applying the immunosuppressive treatment in an efficient and accurate way
- Following up the side effects of treatment and its interaction with other drugs
- Observing the patient in terms of the possible rejection symptoms and findings (pain and sensitivity in the area of graft, fever, abnormality in drainage, yellowing in eyes and skin, fatigue, increase in liver enzymes)
- Supporting the patient for his adherence to and participation in the immunosuppressive treatment

The patient was observed in terms of rejection symptoms and no acute rejection developed during his hospitalization in the transplantation unit.

Immunosuppressive treatment method applied: (Table 2).

Discharge training: Patient training is an important process that enables the patient to take the responsibility of self-care and enhances her/his life quality [15].

Training subjects for patients and their relatives

- Sustainment of Treatment
- Rejection Symptoms
- Nutrition- Protection from Obesity
- Infection Symptoms and Findings
- Breath Exercises
- Wound Care and Dressing
- Meeting the Self-Care Needs
- Mouth Care
- Unwanted Hair
- Having Sunshine
- Physical Activity and Exercises
- Pain Management
- Drugs and Drug Interactions

Transplantation is an important process both for the receiver and the donor. A planned care of the nurse in this process plays an efficient role

Postoperatif	Prednol	Prograf	Cellcept
0. day	4*100 mg	2 mg / 2 mg	_
1. day	4*100 mg	2 mg / 2 mg	_
2. day	4*75 mg	2 mg / 3 mg	_
3. day	4*50 mg	2 mg / 1 mg	_
4. day	4*40 mg	1 mg / 0,5 mg	_
5. day	2*40 mg	0,5 mg / 0,5 mg	_
6. day	2*20 mg	0,5 mg / 0,5 mg	_
7. day	2*20 mg	0,5 mg / 0,5 mg	_
8. day	2*20 mg	0,5 mg / 0,5 mg	_
9. day	2*20 mg	0,5 mg / 0,5 mg	_
10. day	2*20 mg	0,5 mg / 0,5 mg	_
11. day	2*20 mg	0,5 mg / 0,5 mg	_
12. day	2*10 mg	0,5 mg / 0,5 mg	_
13. day	2*10 mg	0,5 mg / 0,5 mg	2*1 gr
14. day	2*10 mg	0,5 mg / 0,5 mg	2*1 gr
15. day	2*10 mg	0,5 mg / 0,5 mg	2*1 gr
16. day	2*10 mg	0,5 mg / 0,5 mg	2*1 gr
17. day	2*10 mg	0,5 mg / 0,5 mg	2*1 gr

Table 2. Immunosuppressive treatment method applied

in decreasing the possible complications. In this case, the patient was followed up by using a care plan that was developed for the liver transplantation. The developed care plan was used as a guide in the nursing practices. It was established that the planned nursing practices are useful in terms of the written follow-up of patients, efficiency of nursing care and observation of changes in patients, and thus, it is recommended to be used.

As a consequence; In organ transplantation, we cannot ignore the importance of the multidisciplinary approach for patient care. The nurse is at the centre of this team and has very important responsibilities. Observations, nursing practices and evaluations of the organ transplantation nurse are very important in terms of preventing the complications, providing an optimal recovery and creating a difference in patient outcomes.

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Disparities in Access to Health Care: Case of Iran

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Abstract

Background and aim: The health sector plays a significant role in socio-economic development of any country and the appropriate distribution of resources in the health sector have a significant impact on the development of societies. The purpose of the study was the ranking the cities of west of Iran in terms of access to health resource.

Methods: This was a cross-sectional and descriptive study. The Shannon entropy techniques was used to weight 31 health indices. Then using TOPSIS technique Western cities of Iran were ranked in terms of weighted health indices. The study population consisted of 51 cities of west of Iran.

Results: result showed that neurologist for every 10,000 population with weight of 0.079 was the most important index, followed by the indices number of sexually transmitted and dermatologists and ENT specialists per 10000 population. Ranking showed that cities of Qasre Shirin, Kermanshah, Sanandaj, Hamedan, and Ilam were in grades one to five in terms of access to health resources. But the cities of Ravansar, Sarouabad, Dalaho, Malekshahi, Dore cheqini and Salase Babajanihad the lowest level of access and were in 46 to 51 rank, respectively.

Conclusion: The results showed that there is a large gap and inequality in development of the health sector in the cities of West of Iran. Policy makers and health officials should have some programs to reduce this gap and improve access to health services, especially in deprived areas.

Key words: disparity, healthcare resources, TOPSIS, west of Iran.

Introduction

Nowadays the concept of development is a challenging issue in many countries (1). Generally, every country is striving for development, since the goal of development is enhancing the general condition of people's lives; and development is a goal many people consider necessary. Economic development is one of the important factors in development, but it is not the only factor. This is because development is not simply an economic phenomenon. Development is a multi-dimensional process which requires reorganization and redirection of economic and social systems in countries, in which all the sections of the society are involved (2). One of the most important and influential sections in social and economic development and progress of every society is health care which has a significant role in development of that society (3). In developed countries, in addition to observing the health care standards, it is expected of health care section to have production, create job opportunities, make income and profit, and also create an appropriate social background and help growth and development (4).

Moreover, regarding the mutual effect of healthcare and social economical life in the society, the human health is indeed considered an asset besides others; and the healthcare section tries to enhance the health level of humans (Net investment) or to substitute a lost health due to disease or accident. Therefore, inequality in distribution of facilities and services can decline social growth and development (4). Also there is a great deal of evidence showing that in many cases inequality in health strengthen social inequality (5). Hence, in the last decades, inequality in distribution of facilities especially in healthcare section has been regarded by many planners and politicians (6-9). There also have been a lot of studies to investigate the inequality in distribution and access to resources of healthcare section in Iran. Most of these studies have used indices like Gini coefficient, Robinhood Index, Dissimilarity Index, Concentration curve, and other indices to measure inequality (10-14). However, in recent years, the multi-criteria decision making techniques (MCDM) have been used to investigate the access level of different areas of health care resources. Instead of using one criterion to measure the access level, in these models some criteria are used and regarding the extent of access to some healthcare indices, investigate the rankings the different regions (15-17).

Regarding the fact that the existence of appropriate information on access of different areas is vital in optimal allocation of resources and declining inequality in healthcare section; and also because of lack of such information in the western cities of Iran, it has been decided to conduct a study in this field. The purpose of the study is to determine the access level of the western cities of Iran in terms of geographical access to the resources of healthcare section. To achieve this, the Shannon's entropy technique was used to specify weights to the variables of the study, and TOPSIS technique was used to conduct the ranking of areas.

Method

This is a descriptive and cross-sectional study. The aim of this study was to investigate and to rank the western cities of Iran in terms of access level to healthcare sector indices. The population of the study consists of the western cities of Iran. This includes all the cities in 5 provinces of Kermanshah, Kurdestan, Hamedan, Ilam, and Lorestan.

To categorize the cities using TOPSIS technique and based on the healthcare indices, it is necessary to select the indices regarding the available information, and also these indices should be acceptable by the concerned organizations (17). Regarding the different indices in healthcare sector, the present study specified the indices considering the other studies, the access to the data, and the significance of indices. This study has been conducted using 31 health sector indices. These indices have been shown in table 1.These resources have been adjusted based on every 10000 total population, every 10000 female population (for Gynecologists), and every 10000 rural population (for community health workers (Behvarz)) and then the weights of the indices were obtained using Shannon's entropy technique, and in the next stage the development level of the cities were determined using TOPSIS technique. In the following section, the applied techniques for the present study are explained.

Shannon's entropy method

In most of the multi-criteria decision-making problems and particularly multi-indices decisionmaking issues, it is an effective step to have and to know the relative weights of the existing indices in order to solve it. The Shannon's entropy Method as one of the most famous methods of calculating the weights is used in this study. The details are as follows (18).

Like the taxonomy method in the first stage, the decision-making matrix is formed. In the next stage, the non-scaling of the decision matrix is conducted using applied time order which is obtained regarding the following relation:

$$Pij = \frac{Rij}{\sum_{i=1}^{m} Rij}; j=1, ..., n$$

Then after calculating the j-th index and the degree of deviation (di), the weights of the indices are measured. The details the relations of these steps are as follows:

$$Ej = -k \sum_{i=1}^{m} [PijlnPij]$$

m= the number of cities $K = \frac{1}{LNm}$

 $d_i = 1 - E_i$ degree of deviation

Weight of indices
$$W_j \frac{di}{\sum_{j=1}^n dj}$$

Regarding the gained weights from the indices in this stage, those indices bearing more weight are considered to be more significant than others, and therefore their effect is more on the access level of different provinces to healthcare indices.

TOPSIS (Technique for order preference by similarity to ideal solution)

TOPSIS model was first proposed by Hawang and Yoon in 1981. It's one of the best multi-criteria decision making models; and so used a lot. In this method, m choices are evaluated with n indices. This technique has been based on the concept that the selected choice should have the least distance with the positive ideal solution and most distance with the negative ideal solution. It is supposed that the efficacy of every index is monotonously decreasing or increasing (19, 20).

Problem solving with TOPSIS method consists of ordinal stages including formation of decision matrix, transformation of decision matrix into non-index matrix, formation of weighted non-index matrix, determining the positive and negative ideal solution, calculating the distance of choices from positive and negative ideal choices and finally calculating the proportional closeness of the choice from the index. The relation in the final stage is as follows:

$$Ci = \frac{di^-}{di^- + di^+}$$

The final step in this method is ranking the cities based on the amounts gained. The most amount of Ci demonstrates the higher rank and higher level of development. In this study the cities with $0.667 < Ci \le 1$ were ranked developed, the cities with $0.333 < Ci \le 0.667$ developing, and the cities with $0.337 < Ci \le 0$ undeveloped.

Result

After gathering the data related to healthcare section, the weights of variables were determined using Shannon's Entropy method, and then the amount of relative proximity of the index and the rank of each city were calculated using TOPSIS. Table 2 demonstrates the healthcare indices under study, the mean, the highest and the lowest and standard deviation in the western cities of Iran. The index of the number of paramedics per 10000 population has the highest mean and standard deviation (mean=34.78, SD=8.58), and index of the number of dermatologists and sexual transmitted diseases specialists per 10000 population had the lowest mean and standard deviation (mean=0.02, SD= 0.03).

Also, table 2 shows the weights of healthcare indices which have been calculated based on the Shannon's entropy method. The index of the number of neurologists in every 10000 population with the weight of 0.079 was the most significant index, and after that the indices of the number of dermatologists and sexual transmitted diseases specialists and the number of ENT specialists for every 10000 population with the weights of 0.061 and 0.075 respectively. Also, the index of the number of active healthcare centers for every 10000 rural population and the number of general physicians for every 10000 and paramedic for every 10000 had the lowest weights and the least effect in ranking and the access level of the cities.

Table 3 demonstrates the ranking results in western cities of Iran which has been conducted using TOPSIS multi-criteria decision making technique. In this technique, the ranking of each city was determined according to the weights specified for each health index using Shannon's entropy method.

According the ranking in TOPSIS which has been conducted after specifying weights for the indices by Shannon's entropy method, the cities of Ghasre Shirin, Kermanshah, Sanandaj, Hamedan, Ilam, and Toyserkan were ranked respectively on the first to sixth ranks (with the relative indices of 0.553, 0.49, 0.460, 0.446, 0.423, and 0.409). Also the cities of Ravansar, Sarvabad, Dalaho, Malekshahi, Dore Cheqni, and Salase Babajani had the lowest access level and ranked in the 46th to 51st.

Figuer1 depicts the study area and status of cities in terms of development. Also, the development level of the cities based on the province are shown in table 4. This table demonstrates that none of the cities in the provinces under study were developed. In Kermanshah province, 7 cities of Ghasre shirin, Kermanshah, Kangavar, Javanrood, Songhor, Harsin, and Paveh were among the developing cities while other cities were undeveloped. Only 3 cities of Hamedan, Razan, and Malayer in Hamedan province were developing while other 5 cities of the province were undeveloped. In Lorestan province, Khorramabad was developing and others undeveloped. Finally in Ilam province, the cities of Ilam and Mehran were developing and other undeveloped.

Discussion

The first step in development of every region is having awareness about its current situation, so to develop a balanced health in every region, the required recognition should be gained. Therefore, the present study has investigated the western cities of Iran in terms of development level in health section and access level using Shannon's entropy method and TOPSIS.

With the application of Shannon's entropy, different weights of health indices were specified, and using TOPSIS the ranking of the cities was conducted. From among 51 cities under study Ghasre Shirin, Kermanshah, Sanandaj, Hamedan and Ilam were highest in ranking; and the cities of Ravansar, Sarvabad, Dalaho, Malekshahi, Dore cheqni, and Salase Babajani were lowest in ranking in terms of access level of health indices.

Based on the results, the cities were classified in three levels of developed, developing, and undeveloped. None of the western cities of Iran was developed in terms of healthcare. Half of the cities in Kermanshah province were developing. Also, 44.44% of the cities of Hamedan province and 40% of the cities in Kurdestan province were developing, however there is only one city in Lorestan province (10% of the cities) is considered developing, and from Ilam province, 2 cities (25%). These results are in harmony with the results of Sepehrdoust's study investigating the regional disparities of provinces in Iran in terms of health indices (21). In Sepehrdoust's study, Kurdestan and Kermanshah were classified in less developed regions and Lorestan in under developed region. However, Ilam was categorized among developed region which is different from our result. It may be due to using more indices and also weighting the variables in the present study. In Amini's study, Lorestan province was ranked 20th among 25 provinces in terms of development level in health sector (4).

The results show that the western cities of Iran are not at the desired level in terms of access to healthcare indices, and on the other hands, the existing resources of these cities are not distributed in a balanced and proportionate way so that the centers of the provinces have a much better access level. 4 out of 5 cities which are ranked best in case of development level are the centers of provinces. It demonstrates that the concentration of healthcare facilities is in the centers. In general, the cities of Kermanshah, Hamedan and Kurdestan were more developed than cities of Ilam and Lorestan. In addition, the highest extent of inequality is in distribution of human resources and specifically specialists; in a way that most of smallest cities lacked a some of the medical specialists such as Cardiologist, Specialist inInfectious Diseases, Specialist inOrthopedics. The mean of the number of dermatologist and Sexually transmitted diseases specialist for every 10000 population is 0.02 which is very low comparing the mean in Iran 0.039. However, the mean of some of the indices under study like Internist, GeneralSurgeon, and Pediatrician is suitable comparing the mean in Iran (14).

There are many reasons for some of the cities having weak access level. Some of the facilities may not be economically justifiable to establish in fara way regions regarding the low population. For example hospitals and specialized clinics are only established in regions with high population which probably needs more specialized medical services. Many of the healthcare forces are not willing to be employed in deprived regions which lack welfare facilities, and therefore most of them are concentrated in the centers of provinces. Another reason of the unequal distribution of facilities and human resources is that the planners and policymakers have not used a specific criterion to distribute these facilities until the recent decade. Hence, it seems necessary to constantly investigate the distribution of health resources, and appropriate and precise criteria be determined for this distribution so that all the regions gain the best desire access possible. Of course, it's worth noting that physical access to health facilities is only one of the important factors in using such services. As we know, factors like financial access, the quality of services, and cultural and social factors also influence the enjoyment level of services and efficiency of health resources. Therefore, these factors should also be considered beside geographical access to these facilities.

Conclusion

The results of the study showed that there is a great inequality and gap in access and development level of the western cities of Iran in terms of health sector indices. Regarding the fact that health indices have a fundamental role in enhancement of the quality of life and sustained development in communities and also health condition of the citizens in every city, it is suggested to the planners and authorities in health sector to determine the priorities based on the development level of the cities and the access level of the cities to health care indices in regional planning and allocating resources in this field, in order to remove or decline inequalities among cities.

Variables	Operational definition of Variables as per population ratio		
X1	Number of Physicians per 10000 population of city		
X2	Number of total medical Specialists and surgeons per 10000 population		
X3	Number of Paramedics per 100000 population of city		
X4	Number of Dentists per 100000 population of city		
X5	Number of Pharmacists per 100000 population of state		
X6	Number of Public Health Centers per 10000 population		
X7	Number of Internist per 10000 population		
X8	Number of Anesthesiologist per 10000 population		
X9	Number of active Hospital Beds per 10000 population of city		
X10	Number of Active Health House per 10000 Village area population		
X11	Number of health assistant per 10000 population		
X12	Number of community Health Workers (Behvarz) per 10000 rural population		
X13	Number of laboratories available per 10000 population		
X14	Number of Rehabilitation Centers available per 10000 population		
X15	Number of Radiology Centers available per 10000 population		
X16	Number of Pharmacies available per 10000 population		
X17	Number of Cardiologists available per 10000 population		
X18	Number of infectious disease specialist per 10000 population		
X19	Number of Pediatrician per 10000 population		
X20	Number of psychiatric specialist per 10000 population		
X21	Number of Dermatologist and sexual disease specialist per 10000 population		
X22	Number of general surgeon per 10000 population		
X23	Number of Urology specialist per 10000 population		
X24	Number of Orthopedic per 10000 population		
X25	Number of neurologist per 10000 population		
X26	Number of ENT specialistper 10000 population		
X27	Number of Ophthalmologist per 10000 population		
X28	Number of Gynecologist per 10000 population		
X29	Number of radiologist per 10000 population		
X30	Number of Pathologist per 10000 population		
X31	Number of nurse per 10000 population		



Figure 1. The study area and status of cities in terms of development

Table 2. The descriptive analysis and weight and rank of health indicators according to Shannon's entropy method

Health Indicator		M		CD	• • •	
(variable)	Min	Max	mean	SD	weight	Rank
X1	0.90	7.39	2.70	1.11	0.004	30
X2	0	6.32	1.64	1.07	0.011	26
X3	9.25	61.80	34.78	8.58	0.002	31
X4	0	1.49	0.46	0.31	0.012	25
X5	0	0.94	0.13	0.16	0.033	15
X6	0	37.62	3.82	6.32	0.041	13
X7	0	0.47	0.16	0.12	0.018	19
X8	0	0.40	0.13	0.11	0.024	17
X9	0	37.62	9.19	7.32	0.017	20
X10	1.57	18.39	7.82	3.76	0.007	29
X11	0	6.46	2.11	1.61	0.016	21
X12	0.40	25.65	12.59	7.72	0.013	23
X13	0	1.28	0.57	0.30	0.009	28
X14	0	0.82	0.24	0.19	0.020	18
X15	0	1.21	0.44	0.30	0.053	7
X16	0	37.62	3.31	6.51	0.057	5
X17	0	0.36	0.07	0.09	0.046	10
X18	0	0.17	0.03	0.05	0.059	4
X19	0	1.37	0.17	0.21	0.033	14
X20	0	0.39	0.08	0.10	0.045	11
X21	0	0.10	0.02	0.03	0.075	2
X22	0	0.42	0.11	0.11	0.027	16
X23	0	0.14	0.03	0.04	0.051	9
X24	0	0.15	0.03	0.05	0.056	6
X25	0	0.25	0.03	0.05	0.079	1
X26	0	0.14	0.03	0.04	0.061	3
X27	0	0.19	0.04	0.05	0.052	8
X28	0	0.49	0.19	0.12	0.015	22
X29	0	0.36	0.06	0.09	0.012	24
X30	0	0.24	0.06	0.07	0.044	12
X31	0	14.67	6.22	3.45	0.009	27

City	Cio	Rank	City	Cio	Rank
Gasreshirin	0.553	1	Delfan	0.275	27
Kermanshah	0.490	2	Selseleh	0.265	28
Sannandaj	0.460	3	Poldokhtar	0.247	29
Hamedan	0.446	4	Evan	0.241	30
Elam	0.423	5	Kabodar ahang	0.236	31
Toyserkan	0.409	6	Sarpol	0.223	32
Kangavar	0.396	7	Kohdasht	0.207	33
Javanrod	0.390	8	Bijar	0.205	34
Forod	0.390	9	Sahneh	0.185	35
Sanger	0.377	10	Dareh shahr	0.174	36
Khoram abad	0.368	11	Bahar	0.171	37
Harsin	0.367	12	Abdanan	0.159	38
Rezn	0.354	13	Baneh	0.154	39
Marivan	0.352	14	Dehgan	0.153	40
Paveh	0.349	15	Dehloran	0.153	41
Mehran	0.347	16	Azna	0.152	42
Malayer	0.343	17	Kamyaran	0.151	43
Sagez	0.334	18	Shirvan and cheradavol	0.130	44
Borojerd	0.330	19	Divandareh	0.101	45
Nahavand	0.329	20	Ravansar	0.086	46
Famnin	0.314	21	Sarv abad	0.080	47
Asada bad	0.296	22	Dalaho	0.077	48
Dorod	0.288	23	Malekshahi	0.063	49
Aligodarz	0.286	24	Doreh chegeni	0.041	50
Eslam Abad	0.285	25	Salas	0.039	51
Gilan garb	0.276	26			

Tables 3. The ranking of the western cities of Iran according to access to health indices

Table 4. Status of the West provinces of Iran in term of development in the health sector

Province	Level of Development	Cities name	Number	Percentage
	Developed		0	0
Kermanshah	Developing	Gasreshirin, Kermanshah, Kangavar, Javanrod, Sanger, Harsin and Paveh	7	50
	Undeveloped	Eslam abad, Gilangarb, Sarpol, Sahneh, Ravansar, Dalaho, Salas	7	50
	Developed		0	0
Hamedan	Developing	Hamedan, Toyserkan, Rezn, Malayer	4	44.44
	Undeveloped	Nahavand, Famnin, Asad abad, Kabodar ahang, Bahar	5	55.56
Kordestan	Developed		0	0
	Developing	Sanandaj, Gorveh, Marivan, Sagez	4	40
	Undeveloped	Bijar, Baneh, Dehgan, Kamyaran, Divandareh, Sarv abad	6	60
	Developed		0	0
Lorestan	Developing	Khoram abad	1	10
	Undeveloped	Borojerd, Dorod, Aligodarz, Delfan, Selseleh, Poldokhtar, Kohdasht, Azna, Doreh chegeni	9	90
Elam	Developed		0	0
	Developing	Elam, Mehran	2	25
	Undeveloped	Evan, Darehshahr, Abdanan, Dehloran, Shirvan, Malekshahi	6	75

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Abstract

In this paper the instructions for preparing camera ready paper for the Journal are given. The recommended, but not limited text processor is Microsoft Word. Insert an abstract of 50-100 words, giving a brief account of the most relevant aspects of the paper. It is recommended to use up to 5 key words.

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Paper size	A4
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Right margin	18 mm
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Figure 1. Text here

Conclusion

Be brief and give most important conclusion from your paper. Do not use equations and figures here.

Acknowledgements (If any)

These and the Reference headings are in bold but have no numbers.

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