



Perceived Burden and Healthy Lifestyle Behavior in Family Caregivers of the Persons with Disabilities in Bukhara

Buhara'da Engelli Bireylere Bakım Veren Ailelerde Algılanan Yük ve Sağlıklı Yaşam Biçimi Davranışları

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ABSTRACT

Objective: Family caregiving is a common tradition to Uzbekistan. The responsibilities of caring for a person with disabilities may cause caregivers to develop risky health behaviors and become a burden for them. The aim of this study was to determine the relationship between perceived caregiver burden and healthy lifestyle behavior in family members caring for young persons living with disabilities under the age of 24 years.

Methods: The sociodemographic characteristics of the participants were recorded. The number of children in the family, duration of care period, disability group of the one who is cared, duration and type of disability, age and gender of the young person were asked. The Zarit Burden Interview and the Health Promoting Lifestyle Profile II (HPLP II) were used.

Results: Out of 155 caregivers, 89.8% were women and 10.2% were men. There was no correlation between burden and HPLP II in general ($r=0.048$, $p=0.551$). A positive correlation was found between burden and nutrition, one of the sub-dimensions of the HPLP II ($r=0.038$; $p=0.016$), whereas negative correlations were found between burden and health responsibility and stress management sub-dimensions ($r=-0.170$, $p=0.034$; $r=-0.184$, $p=0.022$).

Conclusion: Perceived burden did not affect healthy lifestyle behavior in general. This may be due to the positive meaning that Uzbeks attach to caregiving. This study is the first in Uzbekistan concerning the effect of caregiving to young persons with disabilities on family members. The results show that family caregivers might require additional support for stress management and health responsibility.

Keywords: Burden, disability, family, caregiver, lifestyle

ÖZ

Amaç: Aile bakımı Özbekistan'da yaygın bir gelenektir. Engelli bir bireyin bakımına ilişkin sorumluluklar, bakım verenlerin riskli sağlık davranışları geliştirmelerine neden olabilmekte ve onlar için yük haline gelebilmektedir. Bu çalışmanın amacı, 24 yaş altı engelli gençlere bakım veren aile bireylerinde algılanan bakım verme yükü ile sağlıklı yaşam biçim davranışları arasındaki ilişkiyi belirlemektir.

Yöntemler: Katılımcıların sosyo-demografik özellikleri kaydedildi. Ailedeki çocuk sayısı, bakım süresi, bakım verilenin engel grubu, engel süresi ve türü, yaşı ve cinsiyeti sorgulandı. Zarit Bakım Verme Yükü Ölçeği ve Sağlıklı Yaşam Biçim Davranışları Ölçeği II (SYBDÖ II) kullanıldı.

Bulgular: Yüz elli beş bakımverenin %89,8'i kadın ve %10,2'si erkekti. Bakım verme yükü ile SYBDÖ II arasında genel olarak bir ilişki bulunmamıştır ($r=0,048$, $p=0,551$). Bakım verme yükü ile SYBDÖ II'nin alt boyutlarından beslenme arasında pozitif bir ilişki ($r=0,038$; $p=0,016$), yük ile sağlık sorumluluğu ve stres yönetimi alt boyutları arasında negatif bir ilişki bulunmuştur ($r=-0,170$, $p=0,034$; $r=-0,184$, $p=0,022$).

Sonuç: Algılanan bakım yükü genel olarak sağlıklı yaşam tarzı davranışını etkilememiştir. Bu durum Özbeklerin bakım vermeye yükledikleri olumlu anlamdan kaynaklanıyor olabilir. Bu çalışma, engelli gençlere bakım vermenin aile üyeleri üzerindeki etkisine ilişkin Özbekistan'da yapılan ilk çalışmadır. Sonuçlar, ailede bakım veren bireylerin stres yönetimi ve sağlık sorumluluğu için ek desteğe ihtiyaç duyabileceğini göstermektedir.

Anahtar Kelimeler: Yük, engellilik, aile, bakım veren, yaşam tarzı

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Introduction

Parents of children with disabilities have multidimensional responsibilities and experience various financial, social and/or psychological problems (1). Family caregiving is a tradition common to Uzbekistan and many low-and middle-income countries where formal long-term care services are not available or accessible. Family members may be well-placed to understand the health issues (2). Having a disabled child is a situation that significantly changes parents' daily life, as they have limited time and social interaction for other activities, including work, leisure, and personal care (3). During the coronavirus disease-2019 (COVID-19) pandemic, it remained unclear how family caregivers were adapting to the changes. Maintaining a healthy lifestyle may be more difficult, as they need to spend more time to maintain the level of care. Children with disabilities are dependent on their parents with their needs (4). The requirements of family caregiving are often overwhelming (5). Although taking care of children is a normal role for parents, it becomes more difficult as the child's functional dependencies increase (2). Family members caring for a person with a disability are more likely to have chronic diseases such as asthma, arthritis, chronic bronchitis, hypertension, and to engage in unhealthy behaviors such as smoking and irregular sleep (1).

The caregiver is a person who regularly looks after an individual in need. The caregiver burden is defined as an individual's perception of the negative effects they experience from the stress and responsibilities of caregiving (6). These perceptions are dynamic and changing, and may negatively affect the caregiver physically, psychologically, emotionally, socially and economically because of the negative emotions and experiences (7). Having an imbalance between care demands and care support during the caregiving process, may cause stress and burden to emerge (8). The evaluation of perceived caregiver burden is valuable because family members can be aware of how they are affected from the situation (8). For example, in Mochari-Greenberger and Mosca's (9) study, caregivers stated that having a healthy diet and undertaking physical activity were less frequent. The most commonly cited caregiver burdens included changes in personal plans, time demands, and sleep disturbance. Qualitative and quantitative assessment methods for caregiver burden may enable the development and delivery of support interventions that meet the needs of caregivers and help reduce their burden (6). Studies have shown that the health status of caregivers has an effect on their caregiving, and caregivers with poor health have greater caregiving burden (3,10). It was suggested that support, including meeting the needs of caregivers and increasing their quality of life, might play an important role in their health improvement (11,12).

Studies on the factors affecting caregiver burden are diverse and vary in population, so investigation of caregiver burden in societies with different characteristics and the relationship with health has been recommended (2,6,13). There are no studies from Uzbekistan concerning the effect of caregiving to disabled children on family members. Furthermore, there is no

study examining the relationship between caregiving burden and healthy lifestyle behavior in caregivers of children with disabilities. Therefore, the aim of this study was to evaluate the relationship between caregiver burden and healthy lifestyle behavior in family members caring for the young people living with disabilities in Bukhara, Uzbekistan.

Methods

This descriptive and cross-sectional study was carried out as field research in a collaboration with the students, when one of the authors was on duty as a guest lecturer in the Division of Physiotherapy and Rehabilitation at Bukhara Ibn-i Sina Vocational School of University of Health Sciences in Uzbekistan. The data were collected between the 1st and the 28th of December, 2021. By using census sampling method, it was attempted to contact all individuals caring for a young person with disability living in Bukhara, Uzbekistan. Consenting individuals who were able to read and write and who were caring for a young person below 24 years were recruited for the study. Caregivers caring for persons with disability older than 24 years of age were excluded.

Pre-study sample size was calculated. Sample size was calculated by using G*power 3.0 software (14). The current study required a sample size of 138 participants to provide 95% power to detect a difference at a 0.05 significance level, with a medium effect size ($d=0.3$) and for correlation (15). Considering the possibility of data loss, the sample size was increased by 10%, resulting in a total of 152 participants. A census sampling method was used. Clinical Trial study registry identifier is NCT05351528.

Measures

The researchers identified the families with the information they received from the demarch/reeve of the towns. Data collection was carried out with the students under a researcher's supervision through home visits by making an appointment with the family. After obtaining informed consent from the participants, they were asked to fill in a study-specific personal details form. Data items included were the caregiver's age, height, weight, employment status, income status, marital status, relationship, educational level, place of residence, disease history, and family history. Additionally, information about the caregiver's smoking status, regular exercise habit, and sports habits were obtained. The form also included questions regarding how many children were in the family, the duration of the care period, and the disability group of the young person who was cared for, disability duration and the type of disability, as well as the young person's age and gender.

The Zarit Burden Interview was used because it was used widely to study caregiving burden experienced when caring for patients. It was developed in 1980 by Zarit, Reever, and Bach-Peterson to evaluate caregiver stress (16). The scale, filled by the caregivers themselves or by the researcher, consists of 22 statements that determine the effect of caregiving on the individual's life. The scale has a Likert-type rating, ranging from 0 to 4 as "never,

rarely, sometimes, quite often, almost always”, respectively. A minimum of 0 and a maximum of 88 points can be scored from the scale and a high score indicates a high level of distress. The items in the scale are generally related to the social and emotional domains (16). In studies, internal consistency coefficients of the scale were 0.87 and 0.94; and test-retest reliability was 0.71. The Turkish validity and reliability were confirmed and reported by İnci and Erdem (17).

The Health Promoting Lifestyle Profile II (HPLP II) was developed by Walker et al. (18) and was revised in 1996 (19). The scale consists of 52 items in six sub-dimensions. These are health responsibility (items 3, 9, 15, 21, 27, 33, 39, 45, 51.), physical activity (items 4, 10, 16, 22, 28, 34, 40, 46.), nutrition (items 2,8, 14, 20, 26, 32, 38, 44, 50.), spiritual development (items 6, 12, 18, 24, 30, 36, 42, 48, 52.), interpersonal relations (items 1, 7, 13, 19, 25, 31, 37, 43, 49.), and stress management (items 5, 11, 17, 23, 29, 35, 41, 47.). The scale is scored as “never (1)- regularly (4)”. The lowest score for the whole scale is 52 and the highest score is 208. The higher the score, the higher the participants’ healthy lifestyle behavior. The alpha reliability coefficient for the total scale is 0.922; alpha coefficients for the subscales range from 0.702 to 0.904. The Turkish validity and reliability were confirmed and reported by Bahar et al. (20).

Ethical Consideration

Ethical approval was obtained from University of Health Sciences Türkiye, Hamidiye Faculty of Health Sciences Scientific Research Ethics Committee (approval number: 21/720, date: 26.11.2021). The study was conducted in accordance with the Declaration of Helsinki. Participants were informed that the information they provided would be kept confidential if the results of the research were published. Those who agreed to participate in the study read and signed the written informed consent form.

Statistical Analysis

The Statistical Package for the Social Sciences (SPSS), version 25, was used for statistical analysis (IBM Corp, Armonk, NY, USA). The histogram, Kurtosis and Skewness values and Kolmogorov-Smirnov test were used to evaluate whether the data showed normal distribution. If the Kurtosis and Skewness values were greater than twice the standard deviation and Kolmogorov-Smirnov test value was greater than 0.05 were considered in favor of normal distribution (21). Data were presented as mean and standard deviation (SD) or median and interquartile range (IQR) while frequencies were reported as numbers (n) and percentages (%). Pearson and Spearman correlation analyses were used to assess the perceived caregiver burden and health promoting life style scores. Statistical significance level was accepted as $p < 0.05$.

Results

Initially 196 individuals were planned to be included in this study approached, as it was planned to include all caregivers in Bukhara who met the criteria. The evaluation forms of 41

Table 1. Sociodemographic characteristics of the caregivers

	Min-max	Mean ± SD
Age (year)	19-69	39.53±11.96
Height (cm)	145-190	166.21±8.358
Weight (kg)	10-98	67.73±12.64
	Median	IQR
Number of children	2	2-3
Duration of care (month)	100	48-120
	Number (n)	Proportion (%)
Gender		
Women	139	89.8
Men	16	10.2
Relationship with young person with disability		
Mother	118	75.9
Father	12	7.7
Grandmother	2	1.3
Grandfather	6	3.9
Stepmother	1	0.6
Brother	2	1.2
Elder sister	6	3.9
Aunt	6	3.9
Uncle	2	1.3
Education level		
Primary school	32	20.6
High school	51	32.9
University	42	27.1
Employment status		
Working	58	37.4
Not working	97	62.6
Marital status		
Single	13	9
Married	142	91
Place of residence		
Village	67	43.2
Town	31	20
City center	57	36.8
Income status		
≤100 USD/month	30	19.4
100-200 USD/month	113	72.9
≥200 USD/month	12	7.7
Smoking		
No	147	94.8
Yes	8	5.2
Regular exercise/sports habits		
No	104	67.1
Yes	51	32.9

Table 1. Continued

	Min-max	Mean ± SD
Disease history		
No known features	97	62.6
Hypertension	16	10.3
Cardiovascular system disease	4	4.5
Diabetes	9	5.8
Musculoskeletal disease	6	3.9
Other	20	12.3
Family history		
No known features	126	81.3
Hypertension	4	2.6
Cardiovascular system disease	5	3.2
Diabetes	9	5.8
Musculoskeletal disease	2	1.2
Other	9	5.6
Total	155	100

Min: Minimum, Max: Maximum, SD: Standard deviation, IQR: Interquartile range

participants were excluded due to certain deficiencies. Therefore, the final study population included 155 caregivers. The response rate of the participants in this study was 79.1%. The mean age of the caregivers was 39.5±1.97 years and the mean duration of period of care giving they provided was 100 (48-120) months. Other socio-demographic characteristics of caregivers are shown in Table 1. The mean age of the young people with disabilities was 11.8±6.9 (4-23) years and 80 (51.6%) were men. While 40.6% of the individuals with disabilities had only physical disability, 9.2% had other disabilities in addition to physical disability. The frequency of the type of disabilities is shown in Table 2.

Table 2. Types of disability of caretakers

Disability type	Number (n)	Proportion (%)
Physical	66	42.6
Mental	31	20
Hearing	9	5.8
Visual	10	6.5
Language and speech	11	7.1
Physical and mental	10	6.5
Physical and hearing	1	0.6
Physical and visual	1	0.6
Physical, language and speech	1	0.6
Mental, language and speech	5	3.2
Physical, language and speech	5	3.2
Physical, mental, language and speech	5	3.2
Total	155	100

The mean caregiver burden score was 40.45±10.5 and the healthy lifestyle behavior score was 135.7±19.7 (Table 3). There was no relationship between caregiver burden and healthy lifestyle behaviors (r=0.048, p=0.551). There was a weak positive correlation between caregiver burden and nutrition, one of the sub-dimensions of the HPLP II (r=0.038; p=0.016), and a very weak negative correlation between caregiver burden and the health responsibility score (r=-0.170, p=0.034) and the stress management score (r=-0.184, p=0.022) (Table 4).

Discussion

In this study with the aim of evaluating the relationship between perceived burden and healthy lifestyle behavior on family caregivers of young persons with disabilities in Bukhara, there was no correlation between the scores for caregiver burden and healthy lifestyle behavior scales in general. Only a positive correlation was found between caregiver burden and nutrition sub-dimension, whereas negative correlations were found between caregiver burden and health responsibility and stress management sub-dimensions of HPLP II.

On the contrary, Mochari-Greenberger and Mosca (9) correlated caregiver burden and healthy lifestyle behavior among family caregivers of patients with cardiovascular diseases, and found that caregiver burden was a barrier for healthy lifestyle among family members of patients. The findings of our study may be associated with the fact that Uzbekistan is reported to be the country with the happiest people in Central Asia (22). Even during the COVID-19 pandemic, which generally exacerbated the stress of family caregivers (10), scores-even they do not have cut points- for healthy lifestyle behavior were about high (more than half of the total value) while burden scores was low (less than half of the total value).

In the present study, a negative correlation was found between caregiver burden and health responsibility, stress management sub-dimensions of the healthy lifestyle behaviors scale. Dependencies on family members influence on caregiver stress level on behalf of management and care of the people with disabilities (23).

Table 3. Scores of the caregiver burden and healthy lifestyle behavior

	Min-max	Mean ± SD
The Zarit Burden Interview (possible score range 0-88)	14-72	40.45±10.52
HPLP II		
Health responsibility	9-35	23.52±5.03
Physical activity	8-29	16.69±5.25
Nutrition	9-36	22.44±4.95
Spiritual development	9-36	26.82±4.25
Interpersonal relations	9-35	24.98±4.21
Stress management	8-32	21.26±4.08
Total HPLP II (52-208)	52-203	135.71±19.73

Min: Minimum, Max: Maximum, HPLP II: Health Promoting Lifestyle Profile II, SD: Standard deviation

Table 4. The relationship between caregiver burden and healthy lifestyle behavior

		Health responsibility	Physical activity	Nutrition	Spiritual development	Inter-personal relations	Stress management	Total HPLP
Caregiver Burden	r	-0.170 ^b	0.038 ^b	0.193 ^a	-0.056 ^b	-0.139 ^a	-0.184 ^a	-0.048 ^b
	p	0.034	0.635	0.016	0.486	0.085	0.022	0.551
Health responsibility	r	1	0.366 ^{**b}	0.462 ^{**b}	0.295 ^{**b}	0.460 ^{**b}	0.415 ^{**b}	0.756 ^{**b}
	p		0.000	0.000	0.000	0.000	0.000	0.000
Physical activity	r	0.366 ^{**b}	1	0.426 ^{**b}	0.240 ^{**b}	0.245 ^{**b}	0.397 ^{**b}	0.643 ^{**b}
	p	0.000		0.000	0.000	0.000	0.000	0.000
Nutrition	r	0.462 ^{**b}	0.426 ^{**b}	1	0.198 ^b	0.148 ^a	0.423 ^{**a}	0.620 ^{**b}
	p	0.000	0.000		0.013	0.067	0.000	0.000
Spiritual development	r	0.295 ^{**b}	0.240 ^{**b}	0.198 ^b	1	0.328 ^{**b}	0.429 ^{**b}	0.593 ^{**b}
	p	0.000	0.000	0.013		0.000	0.000	0.000
Interpersonal relations	r	0.460 ^{**b}	0.245 ^{**b}	0.148 ^a	0.328 ^{**b}	1	0.403 ^{**}	0.576 ^{**b}
	p	0.000	0.000	0.067	0.000		0.000	0.000
Stress management	r	0.415 ^{**b}	0.397 ^{**b}	0.423 ^{**a}	0.429 ^{**b}	0.403 ^{**a}	1	0.708 ^{**b}
	p	0.000	0.000	0.000	0.000	0.000		0.000
Total HLP	r	0.756 ^{**b}	0.643 ^{**b}	0.620 ^{**b}	0.593 ^{**b}	0.576 ^{**b}	0.708 ^{**b}	1
	p	0.000	0.000	0.000	0.000	0.000	0.000	

^a: Pearson correlation analysis, ^b: Spearman correlation analysis, HPLP: Health Promoting Lifestyle Profile, *: p<0.05 statistically significant

Bourke-Taylor et al. (24) reported that mothers of children with disabilities with less challenging behavior were psychologically healthier and this situation was inversely proportional to their stress. A study from Türkiye showed that as the motor and communication skills of the young person who was cared for decreased, the caregiver burden increased and the psychological state of the caregiver was negatively affected (25). Consequently, it was recommended that the necessary psychological support for caregivers should be provided (4, 26). Nadeem et al. (27) also showed that parents with children with disabilities reported higher levels of stress than parents with normal children. Although the degree of disability of the young people of our study was unknown and we could not analyze the data in detail, our results supported earlier findings. That is, stress management and health responsibilities scores were about high in those with low caregiver burden scores in our study. These results show that family caregivers of young people with disabilities might require additional support for stress management. We realize that the presence of a relationship between the sub-dimensions reinforces the importance of detailed examination.

The finding that the caregiver burden was inversely related to health responsibilities suggested the necessity of supportive programs. A previous study supports our view, stating that the educational program for mothers of children with disabilities improved the lifestyle goals of the mothers and had a positive effect on their health status (24).

The mean caregiver burden was 40.45±10.5 out of 88 in our study. Piran et al. (2) reported that there was a moderate caregiver burden in families with children with chronic diseases. In addition, considering the factors that increased the caregiver

burden, they recommended that caregivers might be supported with holistic and family-centered programs.

In the study of Miodrag and Hodapp (13), it was reported that mothers with children with disabilities experienced more physical health problems and these problems might hinder the mothers' caregiving and parent-child relationship. In our study, perception of healthy lifestyle behavior of caregivers was about high. However, it might be necessary to address the health status and problems, if any, of caregivers.

The fact that there was no relationship between the disease affecting the young person and family caregivers' history of chronic diseases might be attributed to the inadequacy of diagnosis due to the under-developed health system (28) in Bukhara, but evidence-based studies are essential to support this hypothesis. Lee et al. (1) reported that various chronic diseases were significantly higher in family caregivers of children with disabilities, and they were more likely to engage in risky health behavior, such as smoking. In our study, the number of smokers was 5.2%.

Bozkurt Zincir et al. (5) found positive correlations between caregiving time and caregiver burden; negative correlation between educational level of caregivers and perceived burden of caregivers. Caregiver gender, marital status, and burden also influenced the depression in caregivers. Therefore, we recommend assessing the health status of caregivers in detail in future studies.

The health of children with disabilities is related to the physical, psychological, and social health of their caregivers and so both health screening for, and further research into caregivers are

recommended (1, 10). Caregivers may engage in negative health behavior, such as emotional eating, in order to cope with the difficulty of caregiving (29). The finding in our study that a positive correlation between caregiver burden and nutrition sub-dimension of the healthy lifestyle behaviors scale highlights the importance of this situation by examining the relationship between caregiver burden and healthy lifestyle behavior. Nutrition was another sub-dimension of healthy lifestyle behavior which was directly proportional to the caregiver burden in our study. We think Uzbeks attach importance to nutrition in all conditions. Studies are needed on the cultural eating habits of this population. We have seen that studies in the literature are often focused on caretakers' nutrition rather than caregiver's nutrition (30).

Healthy lifestyle behaviors, such as undertaking physical activity, may become complicated in some families of children with disabilities (31). Denham et al. (32) noted that nearly all caregivers reported low levels of physical activity. Our results showed that the rate of physical activity of caregivers was low, but there was no correlation with caregiving burden. Michalsen et al. (33) stated that the encouragement for physical activity in individuals with disabilities should be provided with cooperation and interaction between the individual and the family, while the behavior of the families in this regard was also important. The state of Uzbekistan supports programs developed to strengthen the welfare and health of society, provide a healthy lifestyle, and increase the level of physical activity of the population (34).

In our study, the proportion of women caregivers was higher than for men. Similarly, Toledano-Toledano and Domínguez-Guedea (35) reported that 81.7% of caregivers were women. Bozkurt Zincir et al. (5) found that burden scores of women caregivers were higher than male caregivers. However, the traditional role of women as caregivers, especially in Central Asia, may be a reason for our findings (36). A study underlined the need to promote alternatives and opportunities so that care was shared and did not fall only on women (37). Gender-specific studies should be undertaken.

Falzarano et al. (38) found that greater levels of familism might exert a protective influence against adverse caregiving outcomes. The results of our study which was undertaken exclusively in the population of Bukhara, could not be generalized to the country. It should be remembered that there are no earlier studies in the same field from Uzbekistan. Therefore, it is hoped that this research will inspire further studies based on our study. Comparing the results of our study with the results of different countries might contribute a cultural difference dimension to the lifestyle behavior identified.

Study Limitations

The fact that we did not come across any study related to caregivers across the country was a strength of the study. However, our inability to make comparisons limited us. We recommend that the results be supported by controlled studies or studies comparing the results of individuals in different

disability groups. The second limitation was a subjective one as we did not examine that caregivers might not be able to give clear answers for parameters such as burden, nutrition, and stress management, because they felt uncomfortable with strangers asking personal questions. Moreover, the disability status of the young people should be looked into in greater detail and the effect of this on caregiver burden may be evaluated more accurately. Another limitation was the inability to assess the health status of caregivers in detail. There is a need for advanced studies that examine the factors affecting caregiver burden and lifestyle habits of family caregivers of persons with disabilities.

Conclusion

The burden experienced by caregivers of young people with disabilities in Bukhara was positively correlated with nutrition, and negatively correlated with health responsibility and stress management sub-dimensions scores of a validated healthy lifestyle behavior questionnaire. In our study, perception of healthy lifestyle behavior of caregivers was about high. There were less likely to engage in risky health behavior, such as smoking on the other hand, the rate of physical activity of caregivers was low. Thus, there is a need for further evaluation of caregivers in this population which may aim to increase support for this role, as their health status may be adversely affected by the caregiver burden.

Ethics

Ethics Committee Approval: Ethical approval was obtained from University of Health Sciences Türkiye, Hamidiye Faculty of Health Sciences Scientific Research Ethics Committee (approval number: 21/720, date: 26.11.2021).

Informed Consent: After obtaining informed consent from the participants, they were asked to fill in a study-specific personal details form.

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Footnotes

Authorship Contributions

Surgical and Medical Practices: H.Y., N.K., Concept: H.Y., N.K., Design: H.Y., N.K., Data Collection or Processing: H.Y., Analysis or Interpretation: H.Y., N.K., Literature Search: H.Y., N.K., Writing: H.Y., N.K.

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