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Original Article

Sleep severity and fatigue manifestations in relation to the doctor–patient relationship

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ABSTRACT

Objectives: The doctor–patient relationship has an important role in the delivery of high-quality healthcare. The aim of the present study was to explore and evaluate the impact of sleep severity and fatigue manifestations on doctor–patient relationships.
Methods: The present study was an analysis of a cross-sectional sample of a total of 123 physicians with different specialties and work in various shifts in Iraq. Sleep severity difficulty was measured by Athens Insomnia Scale (AIS) in accordance with the International Classification of Diseases (ICD-10) and the multidimensional nature of fatigue was assessed by the Multidimensional Fatigue Symptom Inventory-Short Form (MFSI-SF). Moreover, the doctor–patient relationship was measured by Difficult Doctor–Patient Relationship Questionnaire (DDPRQ-10).
Results: In this study, nearly half of the physicians (45.5%) were insomniacs. The total fatigue score was 9.46; general fatigue (Mean (M): 5.84 of 24); physical fatigue (M: 5.15 of 24); emotional fatigue (M: 6.04 of 24); mental fatigue (M: 5.45 of 24); and vigor (M: 12.98 of 24). The doctors felt slight irritation in their communications with patients (M: 2.33); had moderate dysphoria (M: 3.37); had slight compliance in their communications (M: 1.71), and slightly considered patients to be self-destructive (M: 1.97). In addition, the study showed that general and physical fatigue, night shift-work, and increased working hours in the public sector were predictors for doctors finding their patient irritating. Similarly, increased working hours by clinicians in the public sector was a predictor for having less compliance in their relationships with patients.
Conclusion: The present investigation suggests that insomnia has an indirect association with negative categories of the doctor–patient relationship.

1. Introduction

Effective communication between a doctor and a patient is considered a central function in establishing a therapeutic doctor–patient relationship, which is both the heart and art of medicine. The relationship of a patient with the doctor has an important role in the delivery of high-quality healthcare. The doctor–patient communication and interpersonal skills cover the ability to obtain information to facilitate accurate diagnosis, convenient counseling, presenting therapeutic instructions, and creating effective caring relationships with patients [1–3]. These are considered the core clinical skills in the practice of medicine aiming to achieve a better healthcare service and patient satisfaction [4,5]. The relationship of a doctor with its patients has an impact on treatment and recovery, and improvement in health outcomes [6].

The impact of fatigue and sleep deprivation has been confirmed on a variety of performance aspects in clinicians working morning or evening shifts [7], but this effect has not been studied with respect to the doctor–patient relationship. Although much has been published on the doctor–patient relationship in the literature, there is an evident gap in the literature on the impacts of sleep and in particular fatigue manifestations on the doctor–patient relationship. The authors performed a comprehensive search in different databases irrespective of dates of published articles, but no relevant studies were found at that time.

Sleep in this study is defined as “a state of reduced awareness and responsiveness, both to internal and external stimuli” [8]. Fatigue is defined as the subjective feeling of tiredness and lack of

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energy [9]. The aim of the present study was to explore and evaluate the impact of sleep severity and fatigue manifestations on doctor–patient relationships. The authors expected that the fatigue types have negative impacts on the doctor–patient relationship.

2. Methods

2.1. Study design and sampling

The current cross-sectional study was a purposive sample of a total of 123 general practitioners and specialists (aged 30–63 years) with different experiences in medicine. The clinicians were invited from different multiple-specialty clinical settings, including one general, one pediatric, and one emergency hospital in Duhok city/Iraqi Kurdistan. The clinicians were working different shifts, including morning, evening, night, and multi-shifts in the public sector in May 2018, and were of both genders. The clinicians were eligible for the study if they were male or female, furthermore, there were no age restriction, and socio-demographic restrictions. Of the total 220 doctors eligible for the study, 164 of them were contactable by the authors. Of the total 164 questionnaires presented to the clinicians, 123 questionnaires were returned, therefore, the response rate was 75%.

2.2. Measurement criteria

The general and baseline characteristics of clinicians were collected through the self-reported technique and included age in years, gender scaled as male or female, education scaled as general practitioner or specialist, physical activity as yes or no and its pattern as regular or irregular, smoking as yes or no and smoking types as light (one to three cigarettes/day) or heavy smokers (more than three cigarettes/day), working sectors scaled as public or private, and average working hours in each sector.

Severity of sleep difficulty was measured by the Athens Insomnia Scale (AIS). It is a self-assessment psychometric instrument that quantifies sleep difficulty in accordance with the criteria set by the International Classification of Diseases (ICD-10). The scale has eight items to evaluate sleep onset, night and early-morning waking, sleeping time, quality of sleep, complaints frequency and duration, distress due to insomnia, and its interference with daily functioning [10]. The scale has been validated in patients with insomnia and with controls aged 18–79 years. The AIS takes 3–5 min to deliver and it is a self-reported measure. An internal consistency ranging from 0.87 to 0.89 and a test–retest reliability of 0.88–0.89 has been found for this scale. The validity of the instrument is highly correlated with scores obtained from Sleep Problems Scale (0.85–0.90) [11]. The sleep difficulty severity is measured on a four-point Likert scale since last month. The scores ranged from 0 (no sleep problems) to 3 (more acute sleep difficulties). A cut-off score of 6 was been determined to distinguish between those with insomnia and healthy subjects.

The Multidimensional Fatigue Symptom Inventory-Short Form (MFSI-SF) is a 30-item short form of the MFSI to assess the multidimensional nature of fatigue. It is a self-reported measure designed to assess the severity, frequency, and daily pattern of fatigue and its perceived interference with quality of life. Respondents indicate the extent to which they experienced a symptom during the last week. The MFSI-SF yields scores only for the empirically derived subscales. It has acceptable psychometric properties and can be used as a substitute for the MFSI when time constraints and scale length are of concern. It is anchored on a five-point scale indicating how true each statement was for the respondent during the last week (0 = not at all; 1 = a little; 2 = moderately; 3 = quite a bit; and 4 = extremely). The empirically derived subscales are considered to assess general, physical, emotional, and mental manifestations of fatigue as well as vigor, an estimate of the patient's energy levels [12]. The reliabilities of the five empirically derived scales in the original validation study were 0.96 for the general fatigue, 0.85 for the physical fatigue, 0.93 for the emotional fatigue, 0.90 for the mental fatigue, and 0.88 for the vigor scale.

The scoring criteria for subscales of MFSI-SF Scoring are measured as general fatigue (sum of items 10, 12, 14, 17, 18, and 28); physical fatigue (sum of items 2, 4, 6, 16, 19, and 26); emotional fatigue (sum of items 3, 8, 13, 21, 23, and 30); mental fatigue (sum of items 1, 11, 15, 20, 25, and 27); vigor (sum of items 5, 7, 9, 22, 24, and 29); and total fatigue score (general + physical + emotional + mental) − vigor [12].

The doctor–patient relationship was measured by Difficult Doctor–Patient Relationship Questionnaire (DDPRQ-10). It is a physician-rated scale carried out after encounters with patients. The scale has 10 items rated on a six-point Likert scale contributing 1 (not at all); 2 (slightly); 3 (moderately); 4 (very); 5 (too much); and 6 (a great deal). It takes 2–3 min to complet. DDPRQ-10 has an internal consistency reliability of 0.96 (Cronbach's alpha) in the original study [13]. It measures five dimensions of the doctor–patient relationship, including (1) the demanding irritating patient, (2) physician dysphoria, (3) compliance and communication, (4) the self-destructive patient, and (5) the seductive patient. It has been validated in adult patients and their healthcare providers in an academic, municipal hospital clinic. The DDPRQ-10 score has no relation to demographic characteristics of patients and physicians and the majority of medical diagnoses.

2.3. Statistical analysis

The descriptive objectives of the study, including the prevalence of insomnia and fatigue and baseline characteristics of participants were determined in a frequency distribution. The correlation of dimensions of the doctor–patient relationship with insomnia and fatigue was established by Kendall's tau-b. The predictors of dimensions of the doctor–patient relationship were examined through the multivariate analysis of variance. The level of less than 0.05 is considered to reject the null hypothesis. The SPSS version 25:00 is used for statistical calculations.

2.4. Ethical considerations

Ethical approval of the present study was obtained from the Scientific Research Committee of the College of Nursing, University of Duhok. The current study gave doctors the guarantee of confidentiality regarding personal information following provision of verbal consent.

3. Results

The mean age of the physicians participating in the study was 46.53 years with a majority of males (56.1%) and general practitioners (54.5%) and workers in both public and private sectors (95.9%). The male female ratio was 1.27:1.0. The study showed that a small percentage of the participants were physically active (25.2%) with irregular patterns (77.4%). Moreover, a small percentage of them were smokers (8.9%) with a heavy pattern (90.9%) over the last four years. They had worked in public and private sectors for the last 4.76 and 4.49 years, respectively, and the most common shift pattern was multi-shifts (35.8%) (see Table 1).

The study showed that having an irritating patient was positively and significantly correlated with total insomnia ($p = 0.049$) and general fatigue ($p = 0.014$). Physician dysphoria and a total score of the doctor–patient relationship were not correlated with insomnia and fatigue categories ($p > 0.05$). Compliance

Table 1
Baseline characteristics of the study participants.

Characteristics ($N = 123$)	Frequency	Percentage
Age (years); mean/SD		
Range: 30–63	46.53	0.871
Gender (male/female)	69/54	56.1/43.9
Education (GP/Specialist)	67/56	54.5/45.5
Physical activity	31	25.2
Regular	7	22.6
Irregular	24	77.4
Smoking	11	8.9
Light smoker	1	9.1
Heavy smoker	10	90.9
Duration	4.0 (median)	4.0 (interquartile range)
Working sector		
Public	5	4.1
Both public and private	118	95.9
Working hours; mean/SD		
Public	4.76	1.0
Private	4.49	1.26
Working shift		
Morning	32	26.0
Evening	35	28.5
Night	12	9.8
Multi-shift	44	35.8
Insomnia		
Total insomnia; mean/SD	5.29	2.12
Insomniac	56	45.5
Healthy	67	54.5
Fatigue; mean/SD		
General fatigue	5.84	2.734
Physical fatigue	5.15	3.32
Emotional fatigue	6.04	3.14
Mental fatigue	5.45	2.59
Vigor	12.98	2.99
Total fatigue	9.46	9.32
Doctor–patient relationship; mean/SD	2.54	0.31
Demanding, irritating patient	2.33	0.41
Physician dysphoria	3.37	0.62
Compliance communication	1.71	0.97
The self-destructive patient	1.97	0.76

GP, general practitioner; SD, standard deviation.

communication with the patient was positively correlated with mental fatigue ($p = 0.023$); similarly, physicians considering patients to be self-destructive was positively correlated with general fatigue ($p = 0.027$), physical fatigue ($p = 0.014$), and total fatigue ($p = 0.045$), and negatively with vigor ($p = 0.047$) (see Table 2).

The insomnia categories were considered as independent variables in the multivariate analysis of variance. The analysis showed that the physicians with insomnia felt that their patients were irritating, self-destructive, had dysphoria and there was less compliance of communication with patients ($p < 0.0001$) (see Table 3). In another multivariate analysis, aspects of the doctor–patient relationship, including the irritating patient, physician dysphoria, compliance communication, and self-destructive patients were considered as dependent variables and fatigue categories, including general, physical, emotional, mental, and vigor. Moreover, the study showed that mental fatigue and vigor are predictors of physicians having dysphoria in their communication with patients ($p = 0.033$ and $p = 0.000$, respectively). The non-significant associations were not shown in Table 3.

In multivariate analysis of variance, the dimensions of the doctor–patient relationship were considered as dependent variables, and insomnia, fatigue, and other baseline characteristics of clinicians were considered as predictors. The study showed that general and physical fatigue, working night shifts, and increased working hours in public sectors were predictors of having irritating patients; non-smoking was a predictor of dysphoria in clinicians in their relationship with patients; and increased working hours in the public sector was a predictor of physicians having less compliance in their relationship with the patients (see Table 4). The non-significant associations were not shown in Table 4. Insomnia was not a predictor of difficulty in doctor–patient relationships from the interactive effect of sleep and fatigue, and baseline perspectives.

4. Discussion

The present study was conducted to explore the interactive impacts of sleep, fatigue, and baseline perspectives of a sample population of 123 clinicians on their relationships with patients in clinical settings.

Much dissatisfaction and complaints by patients in clinical settings are considered to be associated with a breakdown in the doctor–patient relationship [14], despite many clinicians overestimating their abilities with regard to effective communication with patients [15]. Tongue et al., [16] reported that 75% of a group of orthopedic surgeons believed that they communicated effectively with their patients, while only 21% of their patients showed satisfaction in their communications with the surveyed doctors. The present study confirmed that doctors feel the irritation and dysphoria, have less compliance, and consider patients to be self-destructive in their communications with their patients of different severities. A good doctor–patient communication has been shown to be related to the regulation of patients' emotions, facilitation of understanding medical information, better identification of needs, perceptions, and expectations of patients [2,17,18]. Patients who report good communication with their doctor are more satisfied with the care that they receive and have a better adherence to prescribed treatment [4,16,19].

Roughly half of the physicians participating in this study were insomniacs (45.5%). In addition, the doctors with more severe insomnia were more likely to have a negative and less compliant relationship with their patients. The current prevalence of insomnia in clinicians raises concerns regarding the general health of doctors with the health policy makers. The satisfaction of the patients was not examined in this study, but satisfied patients are beneficial for doctors in reducing work-related stress and burnout [2,20].

Doctors' burden of work has been considered to be a barrier to a good doctor–patient relationship [21]. More than 95% of the

Table 2
Correlations of doctor–patient relationship with insomnia and fatigue.

	Insomnia total	General fatigue	Physical fatigue	Emotional fatigue	Mental fatigue	Vigor	Total fatigue
Irritating patient	**0.136/0.049**	**0.168/0.014**	0.081/0.231	0.026/0.701	−0.046/0.499	0.024/0.727	0.034/0.608
Physician dysphoria	−0.029/0.681	−0.020/.771	−0.020/0.768	0.015/0.824	−0.068/0.327	−0.020/0.775	−0.021/0.750
Compliance communication	0.014/0.848	0.017/0.820	0.106/0.150	−0.007/0.921	**0.170/0.023**	0.021/0.771	0.068/0.343
Self-destructive patient	0.086/0.249	**0.165/0.027**	**0.182/0.014**	−0.025/0.732	0.085/0.254	**−0.147/0.047**	**0.145/0.045**
Total DPQR	0.105/0.120	0.111/0.098	0.078/0.240	−0.028/0.677	0.026/0.701	−0.014/0.829	0.030/0.642

The numbers are in r/p-values (two-sided). Kendall's tau-b was performed for bivariate correlation. Values in bold show significant correlation. DPQR, Difficult Doctor-Patient Relationship Questionnaire

Table 3
Multivariate analysis of variance in doctor–patient relationships with respect to clinicians' insomnia and fatigue.

Predictors	Dependent variables	Mean squared	F	Significance	Partial eta squared
Insomnia Categories	Irritating patient	333.331	2090.007	0.000	0.972
	Physician dysphoria	700.128	1821.012	0.000	0.968
	Compliance communication	179.362	188.268	0.000	0.757
	Self-destructive patient	238.828	422.830	0.000	0.875
Mental fatigue	Physician dysphoria	0.560	2.083	0.033	0.312
Vigor	Physician dysphoria	0.911	3.385	0.000	0.480

Table 4
Multivariate analysis of variance of the doctor–patient relationship with respect to clinicians' insomnia, fatigue, and baseline characteristics.

Predictors	Dependent Variable	Mean squared	F	Significance	Partial eta squared
General fatigue	Irritating patient	1.159	8.951	0.003	0.081
Physical fatigue	Irritating patient	0.514	3.973	0.049	0.037
Smoking	Physician dysphoria	1.724	4.908	0.029	0.046
Working shift	Irritating patient	0.758	5.855	0.001	0.147
Working hours (public sector)	Irritating patient	0.511	3.952	0.050	0.037
	Compliance communication	5.642	6.267	0.014	0.058

participants work in both the public and private sectors resulting in fewer opportunities for them to have sufficient sleeping hours, possibly resulting in chronic fatigue. The mean number of working hours in the public sector was 4.76 h; however, night-shift work is 12 h long. Working in a multi-shift or in multiple sectors requires doctors be on call over consecutive days, restricting sleeping hours, thus resulting in fatigue. The fatigue and sleep deprivation (associated with long working hours and shift work) has several effects, including personal safety risks, such as an increase in occupational accidents and clinical errors [22].

The study showed that insomnia and fatigue can separately define the difficulties of aspects of a doctor–patient relationship. In the interactive effects of sleep and fatigue, insomnia was not a predictor for the aspects of a doctor–patient relationship. However, a positive correlation was found between sleep and fatigue in this study (data not shown). The exact pathway of the association between fatigue and the difficult doctor–patient relationship is unclear. However, the sleep deprivation and chronic fatigue have been shown to be associated with doctors' mood, cognitive ability, memory, and performance. Williamson and Feyer [23] studied the impacts of sleep deprivation on subjects' performance, including cognitive and motor speed, accuracy, coordination, and attention. They found that reaction time to an action and tiredness were increased and accuracy, coordination, and memory accuracy were decreased following sleep deprivation, even reaching levels equivalent to the maximum alcohol dose of blood alcohol concentration (BAC) of 0.1%. Biologically, the sleep/wake homeostatic process regulates fatigue creating pressure for sleep as a function of time awake and lowers pressure as a function of time asleep. This happens in interaction with a circadian process [24]. A state of fatigue occurs when these two processes are temporally misadjusted owing to sleep deprivation, night shifts, or jet lag [7].

Brain activity and behavioral responsiveness are highly regulated by sleep and wakefulness. The sleep and wakefulness are controlled by a balance of homeostatic drive for sleep, circadian influences on alertness, and a composite interaction of external and internal stimuli [25]. Activation of the circadian wakefulness circuitry and maintenance of sleep homeostasis are required for optimal neurobehavioral performance [26]. The meta-analysis of laboratory-based loss studies showed 1.3 standard deviations or more below the mean of cognitive performances of healthy young adults with sleep deprivation, whether the short-term or chronic kind [27].

Fatigue has been confirmed to be a responsible factor in memory lapses, impairment in communication and judgment. The persons with fatigue (whether temporary or chronic) experience emotional blunting, and difficulties in maintaining concentration. In addition, fatigue can break down interpersonal skills [28].

We cannot ignore the fact that the patients' characteristics have an important role in making a difficult relationship with their doctors, such as manipulative patients.

It is suggested that special attention be paid to the chronic fatigue among doctors in planning and training the future workforce, with the appropriate administrative strategies.

4.1. Strengths and limitations of the study

The strength of the present investigation refers to the high prevalence of fatigue in physicians and its relationship with difficulties of doctor–patient relationship. However, the findings reported in this study must be interpreted with caution as the cross-sectional study preclude us from making a judgement on the causal pathway. Although 75% of available doctors working in major hospitals in the city participated in the study, the findings may not be generalizable to other settings in the rest of the country or across the world. Finally, the distinct effects of various medical specialties have not been considered in this study; it is possible that it is more difficult to establish good doctor–patient communication in some specialties.

5. Conclusions

The present study suggests that general and physical fatigue, working night shifts, increased working hours in the public sector, and non-smoking are the predictors of a difficult doctor–patient relationship.

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Conflict of interest

The authors declare that there are no conflicts of interest.

The ICMJE Uniform Disclosure Form for Potential Conflicts of Interest associated with this article can be viewed by clicking on the following link: https://doi.org/10.1016/j.sleep.2019.02.015.

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