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# A study on the sleep quality of incoming university students

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ABSTRACT

This study was designed to examine the prevalence and the risk factors of poor sleep quality in 4318 incoming university students in Taiwan. The test battery comprised a self-administered structured questionnaire, including items related to personal medical history and lifestyle habits, the Measurement of Support Functions (MSF), Pittsburgh Sleep Quality Index (PSQI), Chinese Internet Addiction Scale-Revision (CIAS-R), neuroticism subscale of the Maudsley Personality Inventory (MPI), and the 12-item Chinese Health Questionnaire (CHQ-12). Of the total study population, 2360 students (54.7%) were classified into the poor sleep quality group, as defined by a PSQI score ≥6. Based on the results of multivariate logistic regression analysis, poor sleep quality was significantly associated with undergraduate students, female gender, skipping breakfast, tea drinking, a higher tendency toward internet addition, poor social support, higher neuroticism, and higher CHQ scores. Poor sleep quality is prevalent among incoming university students in Taiwan, and more work is needed on the identification of the factors influencing poor sleep, and in providing systematic education in the importance of sleep and time management skills to university students.



## 1. Introduction

Sleep is a pivotal modulator of hormone release, cardiovascular activity and glucose regulation, and it has been demonstrated that changes in sleep quality or duration have a significant impact on morbidity (Gangwisch et al., 2006; Banks and Dinges, 2007; Hall et al., 2008; Bixler, 2009). A Finnish study found that there has been a gradual reduction in sleep duration and an increase in sleep complaints over the last 30 years (Kronholm et al., 2008), and poor sleep quality is a common issue in modern society. Additionally, sleep quality is a relevant dimension with regards to sleep–wake functioning, and poor sleep quality has been found to be associated with poor academic achievement and health, as well as increased health care costs and absenteeism from work (Trockel et al., 2000). The prevalence of poor sleep quality in the community has been reported to be 26–35% using the Pittsburgh Sleep Quality Index (PSQI) (Chung and Tang, 2006; Stein et al., 2008; Yao et al., 2008). Sleep problems are common among university students (Yang et al., 2003; Suen et al., 2008; Tsui and Wing, 2009), with the prevalence of poor sleep quality in this population having been reported as ranging from 19.17% to 57.5% (Feng et al., 2005; Suen et al., 2008).

Social support is a broad term, and includes all the supportive ways that different people behave in the social environment. It has been found that isolation or loneliness may be associated with increased incidence of depression and cardiovascular diseases (Arthur, 2006; Cacioppo et al., 2010). In addition, Hawkley et al. (2010) suggested that the same amount of sleep is less healthy when participants feel more social isolated. Therefore, it is plausible to speculate that social support may be associated with the sleep quality. However only few studies have confirmed this relationship (Yao et al., 2008).

It is well known that behavioral and lifestyle factors, such as cigarette smoking, heavy drinking, physical inactivity and excessive Internet usage, are associated with poor sleep quality (Bixler, 2009). Internet addiction is very prevalent in college students, particularly in Asian communities (Morahan-Martin and Schumacher, 2000), and has also been found to be related to mental health morbidity (Tsai et al., 2009), while Choi et al. (2009) reported that it is strongly associated with sleep problems.

Poor sleep quality/insomnia frequently occurs with mental and/or physical disorders (Stein et al., 2008). Soehner et al. (2007) reported finding a high level of neuroticism to be associated with poorer sleep, as indicated by higher PSQI scores. Van de Laar et al. (2010) proposed

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that personality factors may play a causal role in the development of insomnia, but may also be a consequence of the associated daytime dysfunction.

It remains to be fully determined whether impairments in sleep quality in university students are a reflection of changes in modern behavioral or lifestyle factors, or of other factors such as neuroticism or a lack of social support. The primary aim of this study is to investigate the prevalence of poor sleep in incoming university students. We hypothesize that influential factors may include not only poor lifestyle habits and the potential for psychiatric morbidity, but also a lack of social support, and these may all be elevated in those who experience poor quality sleep.

## 2. Methods

### 2.1. Subjects

A total of 5,170 incoming students at National Cheng Kung University were enrolled in 2008, having been invited to participate in this self-administered questionnaire-based study during a routine health examination performed as part of the their orientation procedure. Incoming students are newly arrived students at the university, in their first weeks, whether at undergraduate or graduate level. Prior to commencement of the study, informed consent was obtained from each study participant. Subjects agreed to allow their questionnaire data and related examination results to be analyzed anonymously, and any identifying information was therefore kept confidential. The Ethical Committee for Human Research at the National Cheng Kung University Hospital approved the study protocol.

### 2.2. Assessment of personal lifestyle habits

Through a self-reported questionnaire, the demographic characteristics, personal medical history, and lifestyle habits of the subjects were evaluated. The body mass index (BMI) was calculated as their weight in kilograms divided by the square of their height in meters. According to standard body-mass index (BMI) cutoffs of the World Health Organization, the subjects were classified into underweight (BMI < 18.5), normal weight (BMI 18.5-24.9), overweight (BMI 25–29.9), and obese (BMI ≥ 30) groups. Chronic physical disease was defined as the presence of at least one of the following diseases: hypertension, diabetes, thyroid disease, coronary artery disease, cerebral vascular disease and asthma. The personal lifestyle habits assessed included skipping breakfast, coffee- or tea-drinking, alcohol-drinking, cigarette-smoking and regular exercise. Skipping breakfast was defined as eating breakfast less than three times per week. Students were considered as drinking coffee and tea regularly if they did so at least 3 times per week. In terms of alcohol drinking, students were classified as non-drinkers if they drank no more than one time per week and as current drinkers if they drank alcohol at least once per week. Smoking was defined as smoking at least 20 cigarettes per month, continued at last six months.

### 2.3. Measurement of psychological symptoms

The instruments used to measure the psychological symptoms this domain included the Pittsburgh Sleep Quality Index (PSQI) (Buysse et al., 1989), 12-item Chinese Health Questionnaire (CHQ) (Cheng, 1988), Chinese Internet Addiction Scale-Revision (CIAS-R) (Chen et al., 2003), Measurement of Support Functions (MSF) (Lin et al., 1999), and the 24-item neuroticism subscale of the Maudsley Personality Inventory (MPI) (Eysenck and Eysenck, 1975).

#### 2.3.1. Chinese version of the Pittsburgh Sleep Quality Index (PSQI)

The PSQI is a self-administered questionnaire used to evaluate subjective sleep quality during the previous month (Buysse et al., 1989). It contains 19 self-rated questions yielding seven components: subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medications, and daytime dysfunction. Each component is scored from 0 to 3, yielding a global PSQI score between 0 and 21, with higher scores indicating a poorer quality of sleep. A global PSQI score over 5 indicates a poor sleeper. This questionnaire has a diagnostic sensitivity of 90% and a specificity of 87% in distinguishing between good and poor sleepers (Buysse et al., 1989). The Chinese version of the PSQI has been documented as reliable and valid (Chen et al., 1999), and the internal consistency (Cronbach's $\alpha$) of the PSQI for this sample was 0.66 in our institution.

#### 2.3.2. Chinese Health Questionnaire (CHQ)

The 12-item CHQ- questionnaire is a culturally-sensitive tool for detecting potential psychiatric morbidity among Chinese individuals. The CHQ-12 is a standardized self-reporting screening instrument and has been used previously in surveys of minor psychiatric morbidity in three communities in Taiwan (Cheng, 1988). It can be employed to identify a "probable clinical case" on the basis of cut-off score and to determine the severity of morbidity on the basis of total score, which ranges from zero to 12, with higher scores indicating psychiatric morbidity of greater severity. The sensitivity and specificity of this tool in predicting cases of psychiatric morbidity are 69.6% and 98.4%, respectively (in a community study with a cut-off of 2/3) (Cheng, 1988). In our study, a probable case of psychiatric morbidity was defined using a cut-off value of 3/4, and high psychiatric morbidity was defined as having a score of 4 or above on the CHQ-12 (Chong and Wilkinson, 1989).

#### 2.3.3. Chinese Internet Addiction Scale-Revision (CIAS-R)

The CIAS-R is a four-point, 26-item self-rated measure of good reliability and validity (Chen et al., 2003). This test, which is used to measure the severity of adolescent Internet addiction, includes 26 questions regarding the core symptoms of and problems related to Internet addiction, and five background questions about basic demographics, weekly online hours, habitual domains, and experience of Internet utilization (Chen et al., 2003). The items regarding core symptoms of Internet addiction include questions designed to assess tolerance (four questions), compulsive use (five questions) and withdrawal (five questions), while items focusing on related problems assess the negative impact on social activities, interpersonal relationships and physical conditions (seven questions) and time management (five questions). The total CIAS-R score ranges from 26 to 104, with higher scores indicating an increased severity of Internet addiction. A cut-off score of 64 or more in the CIAS-R (Ko et al., 2005) was used in this study to identify subjects with Internet addiction, as the diagnostic cut-off value of 63/64 has previously been demonstrated to be of high sensitivity (86.6%) and diagnostic accuracy (87.6%). This discriminative potential makes the scale a reliable diagnostic tool for use in large epidemiologic surveys, as it can provide an estimated rate of prevalence of Internet addiction and identify the target case group.

#### 2.3.4. The measurement of support function

The self-reported Measurement of Support Function (MSF) (Lin et al., 1999) questionnaire was administered in this study, and is designed to analyze two dimensions of social support: 1) perceived versus received social support, and 2) social support received under routine versus crisis status. Perceived support refers to the perceived availability of support when needed and appraisal of the adequacy and quality of such support, e.g., questions such as "Could you get someone to lend you a car for an emergency situation if you needed it?" Received support refers to the nature and frequency of specific supportive actions actually received in a real situation. In this study, perceived and received support were taken to represent subjective and objective social support, respectively. Support under routine status depicted either the support received or perceived with daily activities (e.g., participating academic activities and grocery shopping), while support in a crisis status revealed the perceived or received support in an emergency (e.g., a car accident). Thus, this two-dimensional questionnaire consisted of four subscales: perceived crisis support (PCS), perceived routine support (PRS), received crisis support (RCS), and received routine support (RRS). Cronbach's $\alpha$ values for the subscales of the MSF were all greater than 0.93. A higher MSF score indicates the receipt of more social support. In this study, only the PRS and the PCS scores were used, as the domain of perceived social support is likely to have a direct effect on mental health (Lin et al., 1999; Lee et al., 2006).

#### 2.3.5. The neuroticism subscale of the Maudsley Personality Inventory (MPI)

The MPI was designed to measure individual differences in such dimensions as extroversion, psychoticism, and neuroticism. This test allows simple investigation of neurotic tendencies and deceptive behaviors. People with neuroticism personality trait tend to worry and be anxious about what happens around them and they are more likely to have psychiatric morbidity. In our study, neuroticism was assessed using the 24-item neuroticism subscale of the 54-item Maudsley Personality Inventory (MPI) (Eysenck and Eysenck, 1975). A higher neuroticism subscale score indicated a greater tendency towards neuroticism, and subjects scoring higher than 24 points were categorized as abnormal, using the criteria of the MPI. The internal consistency of the neuroticism subscale in the study sample was good (Cronbach's Alpha = 0.89).

### 2.4. .Statistical methods

The subjects were classified into two groups by sleep quality, good (PSQI score < 6) vs. poor sleepers (PSQI score ≥ 6). Group differences were analyzed using the Chi-square or $t$ test, and only the variables with p value less than 0.005, for correcting the multiple comparisons, were put into the multivariate logistic regression, which was performed to analyze the associations between the multiple risk factors and poor sleep. A power analysis was also performed, and the odds ratios (OR) and 95% confidence intervals (CI) of the predictors were derived. All of the analyses were carried out using SPSS software (Version 17, SPSS Inc., Chicago, IL, USA).

## 3. Results

A total of 4,318 incoming university students participants completed the questionnaire (response rate = 4,318/5,170 = 83.5%), 66.0% of whom were male, and there were 2,360 (54.7%) poor sleepers in total. The mean PSQI score was 6.0 ± 2.5 (Fig. 1).

The demographic differences between the poor and good sleepers are shown in Table 1, and reveal that students who were female, with a lower BMI, who were undergraduate students, who skipped breakfast, and who drank tea were significantly more likely to be poor sleepers. Moreover, the results demonstrated that higher levels of neuroticism,

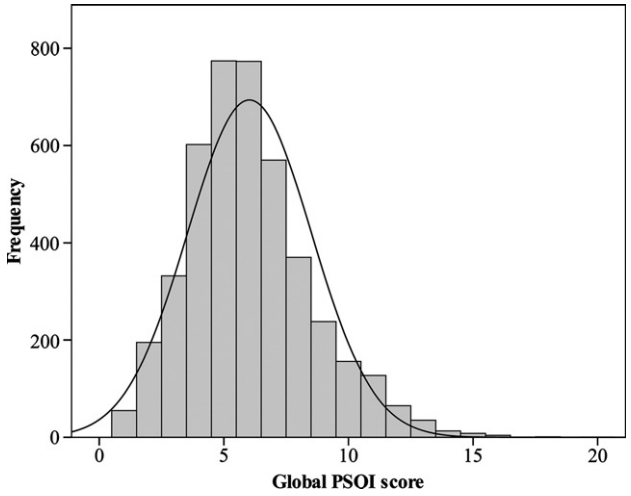


**Fig. 1.** Histogram of the global Pittsburgh Sleep Quality Index (PSQI) scores of the study sample ($n=4,318$).PSQI: Pittsburgh Sleep Quality Index.

higher CIAS-R scores, higher CHQ-12 scores and lower MSF scores were also significantly correlated with poor sleep quality (Table 1).

The results of the multivariate logistic regression also show the following factors to be significant predictors of poor sleep: female gender ($p=0.001$), undergraduate students ($p=0.023$), skipping breakfast ($p=0.001$), tea-drinking ($p=0.026$), higher MPI neuroticism ($p\leq0.005$), lower PRS_MSF ($p=0.001$), higher CHQ-12 ($p\leq0.005$), and Internet addiction ($p=0.002$) (Table 2).

## 4. Discussion

The prevalence rates of poor sleep quality appear to vary with the study population, even when the same assessment tool, the PSQI, is employed. Kang and Chen (2009) reported that 33.8% of medical school students in Taiwan could be characterized as suffering from poor sleep quality as defined by a PSQI score higher than 5, while Feng et al. (2005) found that only 19% of medical college students reported poor sleep quality in China. These results are in contrast with the results of this study of a general university sample, which found 54.7% of the college students to be suffering from poor sleep quality. Suen et al. (2008) also reported a 57.5% prevalence of poor sleepers in a general university sample. However, due to differences in the target population and social and cultural contexts, it is difficult to compare the findings of these earlier works directly. Compared with the prevalence of poor sleep quality in the general community, in the range of 26–35%,, the 54.7% found in this study for incoming university students is significantly higher. Reduced sleep duration is common in modern society (Bixler, 2009) and the sleep duration in poor sleepers was shorter than that of good sleepers in this study (poor sleepers: $6.25\pm1.46$ h, good sleepers: $7.18\pm1.06$ h, $p<0.005$), and this result echoes the findings of previous studies (Cartwright and Wood, 1991; Yang et al., 2003; Tsai and Li, 2004; Buysse et al., 2005).

Based on the demographic results, gender was found to have a significant influence on sleep quality in this study, an observation that validates the findings of Suen et al. (2008). In addition, gender differences in quality of sleep have also been reported in adolescents, college students (Tsai and Li, 2004) and young adults (Lindberg et al., 1997). Specifically, Lindberg et al. (1997) found that a significantly greater number of females reported more barriers to maintaining sleep, frequent episodes of morning tiredness, and repeated daytime napping, while Oginska and Pokorshi (2006) demonstrated that females required more sleep time than males and exhibited a higher level of daytime sleepiness. A general population-based survey in China to study insomnia also showed a higher prevalence of insomnia in females (Xiang et al., 2008). Interestingly, undergraduate students reported poorer quality sleep than post-graduate students. However, this may be because we asked about the sleep habits and quality in

**Table 1**
Differences in demographic characteristics between the good and poor sleepers.

| Predictors | | Good sleepers | Poor sleepers | Statistics | |
|---|---|---|---|---|---|
| | | Number (percentage) | Number (percentage) | | |
| | | 1958 (45.3) | 2360 (54.7) | $t$ / $\chi^2$ | Observed power |
| Sex | male | 1337 (68.5) | 1503 (64.0) | 9.93* | 0.619 |
| | female | 614 (31.5) | 847 (36.0) | | |
| BMI (kg/m$^2$) | <18.5 | 237 (12.1) | 336 (14.2) | 16.48* | 0.771 |
| | 18.5–24.9 | 1338 (68.4) | 1663 (70.5) | | |
| | 25–29.9 | 303 (15.5) | 299 (12.7) | | |
| | ≥30 | 78 (4.0) | 62 (2.6) | | |
| Degree | Post-graduate | 1059 (54.1) | 1169 (49. 5) | 9.09* | 0.581 |
| | Under-graduate | 897 (45.9) | 1191 (50.5) | | |
| Chronic physical diseases | yes | 115 (6.1) | 159 (7.1) | 1.50 | 0.066 |
| | no | 1767 (93.9) | 2092 (92.9) | | |
| Breakfast-eating (times/wk) | <3 | 207 (10.6) | 322 (13.7) | 9.41* | 0.612 |
| | ≥3 | 1748 (89.4) | 2034 (86.3) | | |
| Coffee-drinking (times/wk) | <3 | 1736 (89.5) | 2085 (89.1) | 0.20 | 0.009 |
| | ≥3 | 204 (10.5) | 256 (10.9) | | |
| Tea-drinking (times/wk) | <3 | 1266 (65.2) | 1406 (60.1) | 11.79* | 0.739 |
| | ≥3 | 676 (34.8) | 934 (39.9) | | |
| Alcohol-drinking | yes | 52 (2.7) | 71 (3.0) | 0.50 | 0.013 |
| | no | 1898 (97.3) | 2275 (97.0) | | |
| Cigarette-smoking | yes | 58 (3.0) | 97 (4.2) | 4.25 | 0.234 |
| | no | 1858 (97.0) | 2197 (95.8) | | |
| Regular exercise (times/wk) | <3 | 1409 (72.9) | 1783 (76.1) | 5.76 | 0.345 |
| | ≥3 | 524 (27.1) | 560 (23.9) | | |
| MPI_neuroticism | ≤24 | 1580 (83.7) | 1324 (58.1) | 321.26* | 1.000 |
| | >24 | 307 (16.3) | 955 (41.9) | | |
| PCS_MSF | ≤23 | 371 (19.1) | 671 (28.7) | 52.62* | 1.000 |
| | >23 | 1567 (80.9) | 1666 (71.3) | | |
| PRS_MSF | ≤23 | 340 (17.9) | 643 (28.3) | 61.79* | 1.000 |
| | >23 | 1557 (82.1) | 1629 (71.7) | | |
| CHQ | <4 | 1849 (96.8) | 1962 (85.9) | 148.31* | 1.000 |
| | ≥4 | 61 (3.2) | 321 (14.1) | | |
| Internet addiction (≥64, yes; <64, no) | yes | 172 (8.9) | 408 (17.7) | 67.90* | 1.000 |
| | no | 1750 (91.1) | 1896 (82.3) | | |
| PSQI total (mean ± SD) | | $3.94\pm1.10$ | $7.76\pm1.92$ | -81.79* | 1.000 |
| Subjective sleep quality | | $1.77\pm0.47$ | $2.32\pm0.51$ | -36.78* | 1.000 |
| Sleep latency | | $0.60\pm0.65$ | $1.69\pm1.00$ | -43.28* | 1.000 |
| Sleep duration | | $0.53\pm0.55$ | $1.08\pm0.72$ | -28.05* | 1.000 |
| Habitual sleep efficiency | | $0.05\pm0.25$ | $0.56\pm0.91$ | -25.97* | 1.000 |
| Sleep disturbances | | $0.31\pm0.46$ | $0.84\pm0.44$ | -38.14* | 1.000 |
| Use of sleeping medication | | $0.00\pm0.04$ | $0.04\pm0.25$ | -7.15* | 1.000 |
| Daytime dysfunction | | $0.68\pm0.53$ | $1.24\pm0.60$ | -31.94* | 1.000 |

PSQI: Pittsburgh Sleep Quality Index.
BMI: body mass index.
Chronic physical disease: includes hypertension, diabetes, thyroid disease, coronary heart disease, cerebral vascular disease and asthma.
MPI: Maudsley personality inventory.
PCS: perceived crisis support.
PRS: perceived routine support.
MSF: measurement of support functions.
CHQ: 12-item Chinese health questionnaire.
*: $p<0.005$

**Table 2**
Risk factors of poor sleep identified by multivariate logistic regression analysis, with only the significant variables shown.

| Predictors | | OR | 95% CI | *p* |
|---|---|---|---|---|
| Sex | (male *vs.* female) | 0.78 | 0.67−0.91 | 0.001 |
| Degree | (post-graduate *vs.* under-graduate) | 0.85 | 0.74−0.98 | 0.023 |
| Breakfast-eating | (<3 *vs.* ≥3/week) | 1.47 | 1.18−1.83 | 0.001 |
| Tea-drinking | (≥3 *vs.* <3/week) | 1.18 | 1.02−1.35 | 0.026 |
| MPI_neuroticism | (>24 *vs.* ≤24) | 2.78 | 2.36−3.28 | ≤0.001 |
| PRS_MSF | (>23 *vs.* ≤23) | 0.66 | 0.52−0.85 | 0.001 |
| CHQ | (≥4 *vs.* <4) | 2.92 | 2.14−4.00 | ≤0.001 |
| Internet addiction | (yes *vs.* no) | 1.42 | 1.14−1.77 | 0.002 |

−2 log likelihood = 4777.63 , Nagelkerke *R* squared = 0.14.
MPI: Maudsley personality inventory.
PRS: perceived routine support.
MSF: measurement of support functions.
CHQ: 12-item Chinese Health Questionnaire.
OR: odds ratio.
CI: confidence interval.

the previous month, and incoming undergraduate students might be more susceptible to the changes in living environment (such as first time moving out of family home) compared to the post-graduate students, who already have some experience of living outside the home. Moreover, when incoming undergraduates first join university the new freedoms that then become available to them, particularly with regard to managing their own schedules, mean that they are more likely to develop poor sleeping habits. Similarly, Tsai and Li (2004) also demonstrated that incoming students had poorer sleep quality than others.

Regarding lifestyle and psychiatric comorbidity, in this study poor sleep quality was found to be associated with tea-drinking, skipping breakfast and minor mental health morbidity. Some of these findings are consistent with those of other studies on skipping breakfast and mental morbidity in poor sleepers (Stein et al., 2008; Nakade et al., 2009). Although coffee and tea are known as stimulants which may maintain aspect of cognition and psychomotor performance (Hindmarch et al., 2000), it was also reported that caffeine consumption may correlated with sleep quality (Curless et al., 1993; Sin et al., 2009). Therefore, it is plausible that tea-drinking may be related with poor sleep quality in this study. In addition, it was found that heavy Internet users often had time management problems, and these, coupled with their habit of staying online late into the night, may lead to excessive fatigue, insomnia and thus impair functioning in the academic and occupational realms (Punamaki et al., 2007; Thomée et al., 2007; Choi et al., 2009; Cheung and Wong, 2011). In Tsai et al. (2009), skipping breakfast was identified as a risk factor of Internet addiction, and the results of this study were similar, and appear reasonable because those addicted to the Internet often stay up all night, and get up too late to eat breakfast before classes or work (Tsai et al., 2009), and report poor sleep quality. The neuroticism personality trait (as defined by the MPI neuroticism score) was also found to be associated with poor sleep quality in the incoming university students included in this study, and it is speculated that these students may prefer to spend time alone in order to avoid situations that may provoke anxiety. Although several previous studies have proposed that subjects with a poor sleep quality have some notable personality characteristics, including depression, neuroticism, anxiety, and internalization, as well as perfectionism (van de Laar et al., 2010), it has been also been noted that the specific roles of personality traits in the etiology of sleep problems are not yet clear (van de Laar et al., 2010). Moreover, Lee et al. (2005) reported that neuroticism scores may be associated with $D_2$/$D_3$ receptor availability in healthy individuals, and it is well-known that the dopaminergic system may be one of the most important systems involved in poor sleep quality (Lee et al., 2007). In light of these findings, an association between neuroticism and poor sleep quality appears plausible.

This work also found that social support was related to sleep quality. Luanaigh and Lawlor (2008) found in their study of elderly individuals that loneliness was correlated with poor sleep quality, and it has also been demonstrated that a social network is an important factor influencing sleep quality in older adults (Yao et al., 2008). Therefore, the association between social support and sleep quality found in this study is reasonable.

The results of the current study need to be interpreted with caution due to the following limitations. First, we did not conduct individual interviews to confirm the existence of sleep problems and psychiatric morbidity. Second, we identified only an association between the influential factors discussed above and sleep quality, but did not clarify the mechanism of these influential factors, and thus the causal relationships cannot be confirmed. Finally, exclusion of those university incoming university students who did not complete all of the questions forming the test battery might have influenced the reliability of the findings.

In summary, the percentage of incoming students reporting poor sleep quality was remarkably high. The findings of this study suggest that incoming students need to be made more aware of the consequences of insufficient sleep/poor sleep quality, which have been found to be associated with poor academic achievement and health, as well as higher levels of absenteeism (Trockel et al., 2000). In addition, students with poor lifestyle habits, weak social support, overuse of the Internet and poor mental health are more vulnerable to becoming poor sleepers. However, it should be noted that all the data for this study were obtained before school began, and thus the factors examined represent the risks that incoming university students bring with them to their university careers, rather than those that are developed during their time in university. However, the results of this work can still act as an important aid to help university administrators to identify the factors influencing poor sleep and to provide systematic educational program for university students, which should cover elements related to lifestyle, social support, and time management skills.

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