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RESEARCH ARTICLE

Prevalence and Associated Factors of Poor Quality of Sleep among Prisoners in Mettu Town Prison, Oromia, South West Ethiopia, 2019

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Abstract:

Background:

Sleep is one of the basic needs of human beings and is important to their health; sleeping problem has a wide range of causes, including medical and psychological. However, evidence on the burden of sleep problems in low-income countries is lacking. When compared to the general population, the risks of having poor sleep quality are substantially higher in prisoners. However, the prevalence of poor sleep quality among prisoners at national level is not known.

Objective:

To assess the prevalence and associated factors of poor quality of sleep among prisoners in Mettu town prison, 2019.

Methods:

A cross-sectional study design was employed with 310 prisoners selected by a systematic random sampling method. Data was collected by a face to face interview using the Pittsburgh Sleep Quality Index (PSQI). Data analysis was done using SPSS version 20.

Results:

The study revealed that 77.1% (n= 239) of participants had poor sleep quality. Marital status: single (AOR=0.11, 95%CI=0.05, 0.26), widowed and divorced (AOR=0.11, 95%CI=0.03, 0.37), history of previous incarceration (AOR=4.8, 95%CI=2.0, 11.79), urban residence (AOR=2.65, 95%CI=1.12, 6.27), unable to read and write and read (AOR=6.10, 95%CI=1.43, 25.9) and lifetime alcohol use (AOR=8.45, 95%CI=3.88, 18.36) had significant association with poor sleep quality.

Conclusion:

This study has shown that the prevalence of poor sleep quality among prisoners was very high. Marital status: single, widowed and divorced, history of previous incarceration, urban residence, cannot write and read and lifetime alcohol use found to have an impact on the prevalence of poor sleep quality.

Keywords: Sleep disorders, Pittsburgh sleep quality index, Prison, Sleepiness, Adult prisoners, PSQI.

Article History

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1. INTRODUCTION

Sleep is an important physiological process with many restorative functions. It is essential in maintaining the body's circadian rhythm and one of the basic needs of human beings [1 - 3]. Sleep disorder is a common problem in adults and affects physical and mental health [2, 3]. Poor sleep quality, often referred to as "sleep disturbance", is found in up to 55% of the elderly population and consistently increases with age

[1]. In fact, one in four people experiences sleep difficulties, which include trouble falling asleep, trouble staying asleep, early morning waking, sleeping too much, or restless or unsatisfying sleep [4]. Today, poor sleep quality among adolescents is becoming a major worldwide concern and is widely recognized as a significant public health problem [5].

The prison environment is one of the main challenges to the overall health of prisoners [6]. In prison, communication and relationship with families and friends also restricted. It's understandable that anybody in prison would be generally affected by poor quality of sleep. Around a third of the general

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population experiences insomnia at some point in their lives; however, recent figures show prisoners are at least twice as likely to have insomnia and the majorities have poor sleep quality [7]. This is problematic because insomnia has been shown to significantly contribute to poor cognitive functioning, depression, suicide, emotional deregulation, aggression and lack of treatment engagement, all of which may affect the safe running of the prison, an individual's rehabilitation and, ultimately, the likelihood of reoffending [8].

Majority of the prisoners are kept in groups in a cell and are made to sleep on the floor, which is one of the main sources of infectious diseases [6]. In most prisons, prisoners often lack space to sleep or sit, hygiene is poor, and food and clothing are inadequate, and also forced to work when sick [9, 10].

Furthermore, the prison experience can be inherently stressful, which can contribute to insomnia. For example, prisoners experience a complete upheaval of normal life, family and routine forced contact with others and lack of autonomy, all of which can augment the stressful experience. Moreover, poor sleep hygiene, including daytime naps, boredom or paucity of daytime activity, is evident in prisoners [11]. Availing sleep management options in prison offers the potential to impact positively on a number of these common risk factors [8].

Very little research has been conducted on poor sleep quality in prison internationally. A study conducted on insomnia management in prisons in England and Wales reported prevalence rates from 11 to 81% [11]. Another study completed in maximum security women's prison in the United States indicates that 72% of the sample met the criteria for poor sleepers [12]. A cross-sectional study of the prevalence and associated risk factors of insomnia in adult prison populations in England reported an 88.2% rate of poor sleep quality [7]. Researchers at the UK's University of Warwick Medical School conducted large-scale, multinational study of sleep disorders among eight countries in Asia and Africa which showed an overall rate of nearly 17% of the populations in these developing nations suffering from sleep problems [13]. The overall prevalence rate of insomnia among a mostly male population housed in a Swiss remand prison was 44% [12]. One study in China on the prevalence and risk factors of poor sleep quality among Chinese elderly in an urban community showed rates of self-reported insomnia ranging between 10% and 48% [14]. Another study conducted on bullying as a risk for poor sleep quality among high school students in China revealed that the number of adolescents involved in poor sleep quality worldwide varies between 18.7% and 25% [15].

One study among undergraduate students reported 16 to 67% having poor sleep quality [16]. Other studies in Taiwan and Hong Kong Chinese reported the prevalence of poor sleep quality ranging from 6% to 78% [14]. In Mainland China, there was only one epidemiological study, reporting that 50% of elderly aged 60 or older had poor sleep quality in a sample population in rural areas [14]. One study done in primary health care revealed that poor sleep quality was present in 38.0% of total subjects [2]. Among Malaysian adults aged 30 to 70 years in four urban areas in Selangor, the prevalence of poor sleep quality with symptoms of insomnia was 33.8%, with

12.2% of them reported to have chronic insomnia [16]. A study in Malaysia on prevalence and factors associated with poor sleep quality among secondary school teachers in a developing country revealed the prevalence of poor sleep quality was 61% [16].

One study done among school students in Malaysia showed the prevalence of poor sleep quality was 24.0% (5). A study of the factors associated with poor sleep among medical students has been estimated to be 15% to 35% (17). The other study conducted among communities in Ethiopia showed that the overall prevalence of poor sleep quality was 65.4% [3].

The known risk factors of insomnia include female sex [1, 2, 11, 16], old age [2, 5, 9, 15], depression, snoring, low level of physical activity, the presence of underlying disease, low education level and economic status, living alone and stress [2, 14, 15, 17]. Chronic medical illnesses, depression, substance use, having lower levels of emotional support or being single, divorced or widowed, psychosocial factors and psychological influences are important factors that affect sleep quality [1, 2, 11, 14, 16 - 21]. For some prisoners, "guilt" and "shame" over criminal actions also contributed to poor sleep [12].

2. METHODOLOGY

2.1. Study Area

This study was conducted in Mettu town prison, which located in Ethiopia, Oromia Regional State, Illubabor Zone. Mettu is a capital town of the Illubabor administrative Zone and it is located at 600 Km South West of Addis Ababa, a capital city of Ethiopia.

Study design and period: An institutional based cross-sectional study was conducted from June 1 to 15, 2019.

2.2. Study Population

All prisoners in Mettu town prison was included in the sampling frame to get an equal chance to be selected during the data collection period and seriously ill were excluded from study.

2.3. Sample Size Determination

Reviewing a literature, no similar study with the same title was found, therefore, 50% estimated proportion was used in order to get sufficient sample size. The single population proportion formula used to determine a sample. The total number of prisoners in Mettu town prison was 1111 which is less than 10,000. Using finite population correction formulas and considering 10% of the non-response rate, the final sample size becomes = 314.

2.4. Sampling Technique

Systematic random sampling was done using the prisoner's list, and the sampling interval size was calculated using the formula $(N/n = k)$. Where N is the total population (1111), n is sample size (314), while k is sampling interval size, $K = (\text{approximately } 4)$. Therefore, participants were selected every 4 interval, starting from the first study unit.

2.5. Data Collection Procedure and Tools

Data was collected by face to face interview technique. Initially, a questionnaire in the English language was translated into local language, Amharic and *Afan Oromo* and back to English by an independent person to check consistency. The questionnaire has seven different subsections: 1st socio-demographic data, 2nd socioeconomic factors, 3rd Pittsburgh Sleep Quality Index (PSQI), 4th prison environment-related factors, 5th clinical related factors, 6th social support and 7th lifetime substance use. Questionnaires about socio-demographic data and structured questionnaires for assessment of associated factors were developed after extensive review of literature and similar study tools. PSQI was used to screen the presence and absence of poor quality of sleep [22]. It is valid and reliable to assess the presence and absence of poor quality of sleep [22]. The PSQI is an effective instrument used to measure the quality of sleep and patterns of sleep in the adult. It differentiates “poor” from “good” sleep by measuring seven domains: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, and sleep disturbances, use of sleep medication, and daytime dysfunction over the last month. The respondent self-rates each of these seven areas of sleep. Scoring of the answers is based on a 0 to 3 scale, whereby 3 reflects the negative extreme on the Likert scale. A cut off point “5” or greater indicates a “poor” sleeper [22]. Clinical factors were assessed by developing structured questionnaire. The Oslo 3-item social support scale was used to assess social support [23, 24]. The magnitude of substance like lifetime alcohol use, cigarette use and khat chewing was assessed by developing structured questionnaire.

2.6. Operational Definition

2.6.1. Poor Quality of Sleep

Participants who scored PSQI “5” or greater indicate poor quality of sleep [22].

2.6.2. Social Support

Participants who scored 3-8 have poor support; those who scored 9-11 have moderate social support and score of 12-14 showed strong support [23, 24].

2.6.3. Chronic Illness

Illnesses that can be managed, but cannot be cured and have a greater risk of developing the poor quality of sleep, such as heart diseases, Diabetic mellitus, HIV/AIDS, past mental illness *etc.*

2.7. Data Processing, Analysis, Interpretation and Presentation

Once all necessary data were obtained, data were checked for completeness. Data were coded, entered to EpiData version 3.1, edited, exported to SPSS and cleaned. The collected data were analyzed using SPSS version 20.0. Data was processed by using descriptive analysis, bivariate analysis and multivariate logistic regression. Descriptive analysis (median, percentage, frequencies and interquartile range) was used to compute demographic characteristics of participants. In addition, bivariate analysis was used to see the significance of the association. variable that shows strong association (p-value <0.25) in bivariate analysis was entered to multivariate logistic regressions to identify independently associated variables. Multicollinearity was checked by variance inflation factor (VIF). Statistical significance was declared at p-value less than 0.05. association of the variables was described using AOR with a 95% confidence interval. The results was presented in frequency tables, pie chart and discussed with previous findings.

3. RESULTS

3.1. Socio-Demographic and Economic Characteristics of Respondents

From a total of 314 participants, 310 were interviewed, giving a response rate of 98.7%. The reasons for nonresponse is 1.3% of the data were not complete. Among 310 prisoners that participated, the majority were males (265; 85.5%). The median age of the respondents was 30 years with an interquartile range of 10 years. Of all participants, nearly half (47.7%) married and about three out of seven (41.9%) were Muslim. About five out of seven (71.6%) were originally from urban in residence prior to incarcerated (Table 1).

Table 1. Sociodemographic characteristics of prisoners in Mettu town prison, South West Ethiopia, June 2019 (N=310).

Study variables		Frequency (N)	Percentage (%)
Gender	Male	291	93.9
	Female	19	6.1
Age	19-25	26	21.3
	26-29	74	23.9
	30-35	92	29.7
	36 and above	78	25.2
Marital status	Married	148	47.7
	Single	126	40.6
	Other*	36	11.6
Ethnicity	Oromo	274	88.4
	Amhara	30	9.7
	Other**	6	1.9

(Table 1) contd....

Study variables		Frequency (N)	Percentage (%)
Religion	Muslim	130	49.9
	Orthodox	80	25.8
	Protestant	90	29.0
	Catholic	10	3.2
Residence before imprisonment	Rural	222	71.6
	Urban	88	28.4
Educational status	Cannot read and write	70	22.6
	1-8 Grade	112	36.1
	9-12 Grade	108	34.8
	Collage and above	20	6.5

*widowed, separated and divorced. **Gurage, Tigre and silte.

The study revealed that more than one in five (23.2%) of participants had a history of previous incarceration. About one fourth (25.2%) were staying >44 months in prison and the median time spent in prison was 24 months with an interquartile range of 34 months. About 13 out of 14 (92.9%) respondents had worked in a prison. About half (48.4%) of respondents reported they have moderate social support.

The study revealed that nearly one fifth (18.4%) of respondents had a chronic physical illness (Table 2).

3.2. Prevalence of Poor Sleep Quality

The on-month prevalence of study revealed that nearly seven in every nine (77.1%) (95% CI, 72.8-81.4%) prisoners had poor sleep quality.

3.3. Factors Associated with Poor Sleep Quality

3.3.1. Bivariate Analysis

Socioeconomic and prison environment characteristics of respondents, including sex, age, having children, family history mental illness, duration of stay in prison, having a job before imprisonment and social support have not show any association with poor sleep quality on bivariate analysis. However, marital status being married, residence before incarceration, educational status, having a history of previous incarceration, having a chronic physical illness, history, past mental illness, history of lifetime alcohol, cigarette and khat use and having common mental disorder were associated with poor sleep quality in the bivariate analysis.

3.3.2. Multivariate Analysis

Multivariate logistic regression analysis revealed that marital status, educational status, history of previous incarceration, residence before incarceration and lifetime alcohol use had significant association with poor sleep quality.

Accordingly, prisoners who were single were 11% less likely to develop poor sleep quality when compared with married prisoners (AOR=0.11, 95%CI=0.05, 0.26) and prisoners who were widowed and divorced were 11% less likely to develop poor sleep quality when compared with married prisoners (AOR=0.11, 95%CI=0.03, 0.37). The odds of having poor sleep quality was 4.8 times more likely (AOR=4.8, 95%CI=2.0, 11.79) in prisoners who had a history of previous incarceration compared with prisoners who have no previous incarceration. Prisoners who came from the urban residence were 2.65 times (AOR=2.65, 95%CI=1.12, 6.27) more likely to develop the poorer quality of sleep than prisoners who were from rural residential prisoners. Prisoners who could not write and read were 6.10 times more likely (AOR=6.10, 95%CI=1.43, 25.9) to develop a poor quality of sleep when compared with prisoners who went to college. Prisoners who obtained education from grade 1 to 8 were 7.36 times more likely (AOR=7.36, 95%CI=2.0, 27.38) to develop a poor quality of sleep when compared with prisoners who went to college joined prisoners. The odds of having poor quality of sleep among prisoners who were lifetime alcohol use was 8.45 times (AOR=8.45, 95%CI=3.88, 18.36) than prisoners who did not use alcohol in their lifetime (Table 3).

Table 2. Clinical factors and Lifetime substance use characteristics of prisoners in Mettu town prison, South West Ethiopia, June 2019 (N=310).

Study variables		Frequency (N)	Percentage (%)
Common mental disorder	Yes	242	78.1
	No	68	21.9
Chronic physical illness*	Yes	57	18.4
	No	253	81.6
Alcohol Use (lifetime)	Yes	186	60.0
	No	124	40.0
Khat Use (lifetime)	Yes	116	37.4
	No	194	62.6
Cigarette smoking (lifetime)	Yes	112	36.1
	No	198	63.9

*Hypertension, Diabetes mellitus, HIVV/AIDS, Asthma.

Table 3. Bivariate and multivariate logistic regression among prisoners in Mettu town prison, South West Ethiopia, June 2019 (N=310).

Study variables	Poor sleep quality		COR(95% CI)	AOR(95% CI)	P-value
	Yes N (%)	No N (%)			
Marital status^b	137(57.3)	11(15.5)	1	1	<0.001<0.001
Married	77(32.2)	49(69.0)	0.13(0.06, 0.26)***	0.11(0.05, 0.26)	
Single	25(10.5)	11(15.5)	0.18(0.7, 0.47)***	0.11(0.03, 0.37)	
Other****					
Previous incarceration^b	190(79.5)	48(67.6)	1.85(1.03, 3.34)**	4.8(2.0, 11.79)	<0.001
No	49(20.5)	23(32.4)	1	1	
Residence before incarceration^b	76(31.8)	12(16.9)	2.29(1.16, 4.5)**	2.65(1.12, 6.27)	0.027
Urban	163(68.2)	59(83.1)	1	1	
Educational status^b	59(24.4)	11(16.2)	5.16(1.62, 16.46)	6.1(1.43, 25.9)**	0.014
Could not write and read	85(35.1)	27(39.7)	4.31(1.51, 12.28)	7.36(2, 27.38)**	
Grade 1-8	81(35.5)	27(39.7)	1.13(0.42, 3.0)	1.04(0.3, 3.58)	
Grade 9-10	17(7.0)	3(4.4)	1	1	
Collage and above					0.94
Common mental disorder^a	195(81.6)	47(66.2)	2.26(1.25, 4.0)**	1.08(0.48, 2.42)	0.85
Yes	44(18.4)	24(33.8)	1	1	
Chronic physical illness^a	52(21.8)	5(7.0)	3.67(1.4, 9.58)**	1.85(0.59, 5.77)	0.28
Yes	187(78.2)	66(93.0)	1	1	
Past mental illness^a	50(20.9)	6(8.5)	2.86(1.17, 6.99)**	2.1(0.7, 6.25)	0.18
Yes	189(79.1)	65(91.5)	1	1	
Alcohol use (life time)^b	165(69.0)	21(29.6)	5.3(2.97, 9.47)***	8.45(3.88, 18.36)	<0.001
Yes	74(31.0)	50(70.4)	1	1	
Khat use (lifetime)^a	99(41.4)	17(23.9)	2.24(1.23, 4.1)**	1.26(0.53, 2.98)	0.59
Yes	140(58.6)	54(76.1)	1	1	
Cigarette smoking (lifetime)^a	98(41.0)	14(19.7)	2.83(1.5, 5.36)**	0.67(0.19, 2.34)	0.53
Yes	141(59.0)	57(80.3)	1	1	

* $P < 0.25$, ** $p < 0.05$, *** $p < 0.001$ (in bivariate model), ****widowed and divorced ^asignificant only by bivariate logistic regression, ^bsignificant both by bivariate and multivariate logistic regression.

4. DISCUSSION

This study revealed an overall prevalence of poor sleep quality was nearly seven in every nine (77.1%). History of previous incarceration, marital status, urban in residence, educational status and lifetime alcohol use had significant association with poor sleep quality.

The finding of this study showed that the prevalence of poor sleep quality among prisoners in Mettu town prisoners was 77.1%. The finding was in line with studies carried out in England and Wales, where the prevalence of poor sleep quality was 11-81% [11]. The probable reason for the similarity of the findings might be both current and previous, population was the same which is a marginalized population.

However, the finding was higher than the study done in high-security women's prison in the US (72%) [12], the study done in China on the prevalence and risk factors of poor sleep quality among Chinese elderly in an urban community (10% and 48%) [14], the study done on prevalence and factors associated with poor sleep quality among secondary school teachers in a developing country (16 to 67%) [16] and study

conducted among community in Ethiopia showed that the overall prevalence of poor sleep quality was 65.4% [3].

The first probable reason for the different prevalence rates might be due to the different study areas. Most of the previous studies were in developed countries [12, 14], in developed countries there might be a supply of better health services for prisoners. The second reason could be most of the previous study were done in the general community [3, 14, 16], but the current study was conducted on the prisoners. Prisoners sleep on the floor from lack of space [9]. In view of this, the prevalence of poor sleep quality is higher among prisoners than the general population.

On the other hand, this study finding was lower than the study done in England in adult prison populations showed prevalence poor sleep quality 88.2% [7]. The variation might be in the previous study, the participants were collected across three different prisons, two male prisons and one female prison [7] but the current study was conducted only on one prison. The other possible reason for difference might be in the previous study the data was collected for long duration of time,

which is more than one year. while, in the current study, the data were collected within a month.

Regarding factors affecting poor sleep quality, the study finding revealed that marital status, educational status, history of previous incarceration, residence before incarceration and lifetime alcohol use had significant association with poor sleep quality.

The results of this study revealed that prisoners, those incarcerated previously, had poor sleep quality compared to those admitted for the first time in prison. This might be explained by the fact that prisoners develop poor sleep quality as a result of repeated exposure to the prison environment. In addition, prison is a place where high control and restriction of movement is common; absence of different services and recreational activities, not well designed or equipped to provide different requirement prisoners. Furthermore, the prison experience can be inherently stressful, which can contribute to poor sleep quality. For example, prisoners experience a complete upheaval from normal life, family and routine, forced contact with others and lack of autonomy [11]. Thinking about the past and looking back on life choices also contributed to poor sleep. For some prisoners, guilt and shame over criminal actions also contributed to poor sleep [12]. Occurrence of poor sleep quality is high in stressful environment.

Prisoners who came from urban residence were more likely to develop poorer quality of sleep compared to rural dwellers. The probable reason might be that urban residents go to bed later than rural residents. In addition, use of technology and social media is higher in urban dwellers than rural dwellers during night time; however, in the prison, such service are restricted which resulted in poor sleep quality in the current study. The results of this study showed that single, widowed and divorced prisoners were less likely to develop poor sleep quality when compared to married status. The probable reason might be married prisoners have different responsibility as they are responsible for their family.; as it's known, married individuals support their children, parents or other relatives and when imprisoned they might develop poorer sleep quality than single prisoner. On the other hand, when a married individual incarcerated, because of separation from partner, they are more prone for poor sleep quality.

This study revealed that there was statistically significant association between low educational status and poor sleep quality. This finding is supported by a study completed in South Korea on factors associated with poor sleep quality in primary care [2]. The possible reason might be living conditions in prison are worst and lack autonomy which leading to poor sleep quality. Those educated might be taking different measures to get better sleep quality, like involving work in prison. The other possible reason could be regularly performing physical exercise was a protective factor of poor sleep quality [14].

In the current study, lifetime alcohol use and poor sleep quality shown significant association. This finding agrees with a study done in England and Wales, insomnia management in prisons in a mixed-method study [11]. The reason might be explained by the fact that many people used alcohol for

relaxation, followed by relieving stress. it's clear that, prison is stressful environments which make prisoners distressed and disturb their sleep pattern. As in prison, when they want alcohol to get enough sleep, they could not get as they need. This can be devastating to prisoners, thereby leading to deterioration in their psychological and social wellbeing making more prone to poor sleep quality.

5. STRENGTH OF THE STUDY

It is the first study of the national and international level done on prisoners for poor sleep quality, and will serve as a baseline for future researches.

Standardized and internationally recognized tools were used, with highly reliable to screen poor sleep quality.

6. LIMITATIONS

Participants of the study were recruited from one prison, which is the only found in Mettu town.

CONCLUSION & RECOMMENDATIONS

In conclusion, poor sleep quality among prisoners was significantly high. Marital status, educational status, history of previous incarceration, residence before incarceration and lifetime alcohol use had significant association with poor sleep quality. Routine screening and availing management in the prison may be of great importance.

Based on the findings, recommendations are made to the administrators of prison:

Employ/hire mental health professionals to work in prison.

Provide training for prisoners on effect of substance use.

Formal education in prison, linking to the nearby educational institutions.

Follow condition of the prisoners by improving bedroom and better bedding.

Recommendations for University:

Availing routine screening and treatment options for poor sleep quality for the prisoners.

Launch workshops on type of stress management linked with the prison's clinic.

Recommendations for Ministry of health

Provide coordinated mental health services in prison.

Recommendations for researcher:

As the first study, further studies are needed to assess poor sleep quality and associated factors among prisoners and its possible intervention.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was carried out after ethical clearance was obtained from the ethical review committee of the department of psychiatry, faculty of health and medical sciences of Mettu University, Ethiopia.

HUMAN AND ANIMAL RIGHTS

Not applicable.

CONSENT FOR PUBLICATION

Selected prisoners were informed about nature, purposes, benefits and adverse effects of the study and invited to participate. Confidentiality was ensured and all related questions they raised were answered. Participation was completely voluntary, with no economic or other motivation, and each participant signed written informed consent for their participation.

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of the article is available from the Mettu University, but restrictions apply to the availability of these data, which were used under license for the current study and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of Mettu University at any time.

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None.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest, financial or otherwise.

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REFERENCES

- [1] George S, Paul G, Paul N, Paul G, George S, Med JC, *et al.* Study on sleep quality and associated psychosocial factors among elderly in a rural population of Kerala. *India* 2018; 5(2): 526-31.
- [2] Kang J, Lee JA, Jang J, Kim YS, Sunwoo S. Factors Associated with Poor Sleep Quality in Primary Care 2013; 34(2): 107-14.
- [3] Berhanu H, Mossie A, Tadesse S, Geleta D. Prevalence and associated factors of sleep quality among adults in jimma town. *Southwest Ethiopia : A Community-Based Cross-Sectional Study* 2018; 2018: 1-10.
- [4] Environment CS, Breathing C, Relaxation PM, Physical G, Routine B. Getting a good night 's sleep. 1-3.
- [5] Kesintha A. Prevalence and predictors of poor sleep quality among secondary school students in Gombak District. *Selangor* 2018; 73(1): 31-40.
- [6] Article O. Incidence of depression among incarcerated woman in central prison, peshawar, pakistan 2012; 9(1): 33-8.
- [7] Dewa LH, Hassan L, Shaw JJ, Senior JSC. Trouble sleeping inside: A cross-sectional study of the prevalence and associated risk factors of insomnia in adult prison populations in England. *Sleep Med* 2017; 32: 129-36.
- [8] Dewa LH, Hassan L, Shaw J, Senior J. Design of a treatment pathway for insomnia in prison settings in England : A modified Delphi study 2018; 1-8. [<http://dx.doi.org/10.1136/bmjopen-2018-022406>]
- [9] Onoria H. The African Commission on Human and Peoples ' Rights and the exhaustion of local remedies under the African Charter 1981; 1-24.
- [10] Prisons in africa. An evaluation from a human rights perspective 2008; 4(December): 22-49.
- [11] LINDSAY H. DEWA, LAMIECE HASSAN JJ. S and, SENIOR J.. Insomnia in prison Insomnia management in prisons in England and Wales : A mixed-methods study. *J Sleep Res* 2017; 26: 322-9. [<http://dx.doi.org/10.1111/jsr.12503>]
- [12] Harner HM, Budescu M. *HHS Public Access* 2015; 63(3): 158-69.
- [13] Stranges S, Tigbe W, Thorogood M, Kandala N, Africa S, Sciences H, *et al.* Sleep Problems : An Emerging Global Epidemic ? Findings From the INDEPTH WHO-SAGE Study Among More Than 40 , 000 Older Adults From 8 Countries Across Africa and Asia. 2012; 35: pp. (8)1173-81.
- [14] Luo J, Zhu G, Zhao Q, *et al.* Prevalence and risk factors of poor sleep quality among Chinese elderly in an urban community: Results from the Shanghai aging study. *PLoS One* 2013; 8(11)e81261 [<http://dx.doi.org/10.1371/journal.pone.0081261>] [PMID: 24282576]
- [15] Zhou Y, Guo L, Lu C, Deng J, He Y, Huang J. Bullying as a Risk for Poor Sleep Quality among High School Students in China. 2015; pp. 1-14. [<http://dx.doi.org/10.1371/journal.pone.0121602>]
- [16] Musa NA, Ming F, Wong LP. Prevalence and factors associated with poor sleep quality among secondary school teachers in a developing country. 2018; pp. 407-18. [<http://dx.doi.org/10.2486/indhealth.2018-0052>]
- [17] Priya J, Singh J. Study of the factors associated with poor sleep among medical students. 2017; 2: pp. (June)422-9.
- [18] Dewa LH, Hassan L, Shaw JJ, Senior J. Insomnia management in prisons in England and Wales: A mixed□methods study. *J Sleep Res* 2017; 26(3): 322-9.
- [19] Fiona L, Ireland JL, Chu S, Ireland CA. Sleep and its association with aggression among prisoners : Quantity or quality ? *Int J Law Psychiatry* 2016; 47: 115-21.
- [20] Estrada ER, Chiesa I, Orellana AF, Reyes-terán G. Factors associated with poor sleep quality among HIV-positive individuals in Mexico City 2018; 41(3): 123-9.
- [21] Vitkova M, Gdovinova Z, Rosenberger J, *et al.* Factors associated with poor sleep quality in patients with multiple sclerosis differ by disease duration. *Disabil Health J* 2014; 7(4): 466-71. [<http://dx.doi.org/10.1016/j.dhjo.2014.05.004>] [PMID: 25224987]
- [22] Carole B, Msn S, Gnp ANP. The Pittsburgh Sleep Quality Index (PSQI). *Pittsburgh Sleep Quality Index* 2012; 29(6): 1-2.
- [23] Boen H, Dalgard OS, Bjertness E. The importance of social support in the associations between psychological distress and somatic health problems and socio-economic factors among older adults living at home: a cross sectional study. *BMC Geriatr* 2012; 12(27): 1-2. [<http://dx.doi.org/10.1186/1471-2318-12-27>] [PMID: 22682023]
- [24] Abiola T, Udofia O, Zakari M. Psychometric Properties of the 3-Item Oslo Social Support Scale among Clinical Students of Bayero University Kano, Nigeria. *Malaysian J Psychiatry* 2013; 22: 32-41.