Sleep Quality among Older Persons in Institutions

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Abstract

The objective of this study is to identify sleep quality and factors that influence sleep quality amongst older persons in institutions. The participants from this cross-sectional study were selected using a convenience sampling strategy from eight government-funded elderly institutions in Malaysia. The participants are 331 elderly aged 60 years and above. The results indicated that the sleep quality among elderly in institutions is poor, and pain emerged as the main predictor of sleep quality for all groups (normal, mild cognitive impairment and dementia). Dementia has two other main predictors which are role limitation due to emotional problems and emotional well-being.

Keywords: Sleep quality; older persons; institutions; cognitive functions

1. Introduction

Literature about older persons in Malaysia often pointed out that there are deteriorations in health status amongst the elderly. Decline in health status that is often affect older persons in Malaysia are mainly caused by disease

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related to cardio-pulmonary, cognitive impairment and musculoskeletal related disorder (Ministry of Health Malaysia, 2014). Deterioration in health status is very common among elderly due to the ageing process. Quality of life is defined by World Health Organization (1998), as ‘living conditions associated with the corresponding goals, expectations, standards, and concerns of each individual living in different cultural systems’. Quality of life depends on individual's capacities and skills, opportunities and resources to fulfil their needs and fill life goals. The quality of life is a generic concept reflecting a concern with the modification and enhancement of life attributes. For example, physical, moral and social environment and the overall condition of a human life (Zachariae & Bech, 2008). The quality of life is applied both as an objective condition of life which assumed to have a positive effect towards well-being, and as a subjective concept on experienced well-being and life-satisfaction (Zachariae & Bech, 2008).

The quality of life among older persons in institutions is poor as described in previous literature (Higgins & Mansell, 2009). Netuveli, Wiggins, Hildon, Montgomery, & Blane (2006) said that the reason older persons in institutions have poor quality of life is due to depression, financial problems, limitation of mobility, difficulties to do activities of daily living and chronic illnesses. In addition, there are three factors influence quality of life among older persons in institutions. The three factors are a) health status, b) social relationship and c) sleep quality (Tel, 2013; Ribeiro Do Valle, Valle, Valle, & Fior, 2013).

Health status is defined as ‘a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity (World Health Organization, 1948). Health among older persons is determined by patterns of living, exposures and opportunities for health protection (World Health Organization, 2004). The prolonged course of illness and disability from chronic diseases due to ageing can significantly decrease the quality of life among older persons (Higgins & Mansell, 2009).

Social relationship is also one of the factors that could influence quality of life. Social relationship is about establishment of social support and family function. It is essential to establish a healthy social relationship for maintaining good physical and mental health (Ozbay, Fitterling, Charney, & Southwick, 2008). Poor social relationship will lead to withdrawal from society, loneliness and depression.

The third factor that could influence quality of life is sleep. Sleep is vital for human being because it helps body to rest and repair and maintaining proper body’s circadian rhythm. Sleep is essential because it is required daily to restore energy for daily living. Thus, sleep is important to improve quality of life. Previous studies stressed that sleep has close correlation with quality of life (Stone, Ensrud, & Ancoli-Israel, 2008; Tel, 2013). Lack of quality sleep will eventually have the impact on energy, emotional balance and health. Thus, poor sleep quality and sleep disorder like insomnia can reduce the quality of life.

Sleep quality and quality of life decrease when a person gets older (Tel, 2013). Tel (2013) said that sleep is an indicator of the quality of life. Based on previous literatures, older persons who live in institutions have poor sleep quality (Rashid, Ong, & Yi Wong, 2012; Ribeiro Do Valle et al., 2013; Tel, 2013). Poor sleep quality is due to environment, pain, chronic illness and sleep disturbance (Eyigor, Eyigor, & Uslu, 2010; Rashid et al., 2012). Poor sleep quality contributes to higher risk of getting heart disease, depression, falls and accidents. These effects will lead to poor quality of life.

Literature stressed that sleep disorder is more frequent amongst elderly people who live in institutions (Neikrug & Ancoli-Israel, 2010). A review conducted by Neikrug & Ancoli-Israel (2010) indicated that sleep disturbance and sleep difficulty occur amongst 50% of the residents. Sleep disturbance, sleep difficulty and lack of quality of sleep will cause deterioration in health status and quality of life (Tel, 2013). In addition, many older people live in the institutions has a deterioration in cognitive functions such as mild neurocognitive disorder (MNCD) and dementia (Holthe, Thorsen, & Josephsson, 2007).

However, information about sleep quality and predictor of sleep quality amongst older persons with various levels of cognitive function (either normal, MNCD or dementia) in an institution in Malaysia is scarce, insufficient and inconclusive. Therefore, the aim of this study is to identify sleep quality and to determine the predictor of sleep quality among three groups of cognitive function among older persons in institutions. Information obtain would provide a framework to healthcare professionals especially occupational therapy to promote a better sleep quality and to design an effective intervention programme that could ensure sleep quality amongst older persons in institutions.
2. Literature review

2.1. Sleep quality among older persons in institutions in Malaysia and oversea

There are several previous studies have been done about sleep quality among older persons in institutions in Malaysia and oversea. A study conducted by Rashid, Ong & Wong (2012) in non-governmental charity old-folks home in Penang, Malaysia found out that the prevalence of poor quality of sleep in this study population was high. The majority of them 76.8% (116 people) had scored ≥ 5 in Pittsburg Sleep Quality Index (PSQI) which indicates poor sleep quality.

According to a study by Araújo & Ceolim (2010), who conducted a study in the long-term care institutions in the city of São Paulo, Brazil, indicates that 81.6% of the elderly people reported their sleep quality was good or excellent. Nevertheless, there was an elevated frequency of sleep-related problems. There was no significant difference in the PSQI components for the following variables: marital status, education, the number of elderly who shared the dormitory, and locomotion. In addition, few studies were conducted to determine the sleep quality amongst older adults in a nursing home in Turkey indicates that the sleep quality amongst older person is poor (Eser, Khorshid and Cinar, 2007; Orhan, et al., 2012; Tel, 2013). There is a positive relationship between poor sleep quality with depression (Orhan, et al., 2012). Older people who have poor sleep quality were found to be depressed.

2.2. Factors influencing quality of sleep among older persons in institutions

There are several factors that influence the quality of sleep among older persons in the institutions. Previous studies indicated that engagement in occupational such as physical exercises and activities promote better sleep quality (Neikrug & Ancoli-Israel, 2010). However, there is much literature pointed out that there is occupational deprivation amongst older people in institutions. Many literatures consistently shows that older persons who live in institutions spend a high proportion of their daily life being inactive, alone or immobile (Mozley, 2001; Ice, 2002), spend many hours in bed and frequently take a nap during the day which affects their sleeping patterns (Gordon and Gladman, 2010; Neikrug and Ancoli-Israel, 2010) and seldom engage in occupation (Syamsul Anwar & Akehsan, 2015). Furthermore, many of the older people in institutions suffer from primary sleep disorder.

According to a study done by Al-Jawad, Rashid & Narayan (2007), said that the primary sleep disorder is one of the factors influencing sleep quality. The examples of primary sleep disorders are sleep apnea, periodic leg movement, restless legs syndrome, circadian rhythm disturbances and rapid eye movement behavior disorder. This finding is supported by a study done by Ohayon (2001) which described insomnia symptoms, such as difficulty initiating sleep, disrupted sleep, early morning awakening and non-restorative sleep, lead to risk factors for sleep dissatisfaction which affect the quality of sleep.

Physical illness is also a factor that will influence sleep quality (Ana-Maria, 2015). For examples, musculoskeletal disorders: degenerative joint disease, muscle pain and chronic back pain. These are acute and chronic illnesses which are related to insomnia in the general of the elderly population. The existence of pain due to physical illness leads to poor sleep quality. Early study also indicated that prevalence of insomnia symptoms was higher in subjects with several health problems. In addition, according to a study by Hayashino et al. (2010), he found out that the number of co-morbid of physical illness conditions was associated with sleep quality.

Previous studies indicated a high prevalence of depression among older people in the institution (Al-Jawad et al., 2007). According to Phillips & Ancoli-Israel (2001), factor influencing the quality of sleep is psychological disorder like depression. A psychological disorder like anxiety and depression could lead to sleep difficulty and it could decrease the quality of sleep (Roepke & Ancoli-Israel, 2010). Based on a study done by Al-Jawad et al., (2007), depression and anxiety were related to sleep quality in the present Chinese sample population. Anxiety disorders interfere with sleep in the elderly. Anxiety dreams, panic attacks, and post-traumatic stress disorder associated nightmares have been reported by older people patients as a result of frequent use over-the-counter medications or alcohol for relief (Phillips & Ancoli-Israel, 2001).

According to Roepke & Ancoli-Israel (2010), the environment is also one of the factors influencing the quality of sleep. The examples of environment factor are light exposure, food intake and work schedules. Those environment
factors enable people to change according to the external environment. Those are environmental cues to stimulate the daily rhythms of behavior and physiology driven by the circadian clock system. Sleep-wake timing is one rhythm that is influenced by both the circadian clock system and the external environment (Akerstedt et al., 2010 and Wittmann et al., 2006). This statement is supported by Neikrug & Ancoli-Israel (2010) who found that light, noise, extreme temperature, uncomfortable mattress, television watching in bed could affect the quality of sleep. This situation often occurs in elderly in the institution.

The quality of life is also one of the factor influences in sleep quality. According to Eun-Ha & Yeong-Kyeong (2010), quality of life emerged as a significant predictor of sleep quality. The factors calculated for 28.8% of the variance in the health-related quality of life of institutionalized older people. According to a study conducted by Hudson & Alessi (2008), there is evidence that sleeping problems can interfere with an ability to cope with daily activities. Effects of sleep disturbance can significantly impair their well-being and quality of life.

3. Methodology

A cross-sectional study was conducted and the participants of the study were selected by using a convenience sampling strategy. The study was conducted at eight governmental funded elderly institutions in which located throughout Peninsular Malaysia.

3.1. Participant recruitment

Each participant who lives in the institutions was approached individually. Participant who consented to the study and who fit the inclusion criteria was given the explanation about the aims and procedure of the study. The inclusion criteria for the study are: a) age 60 years and above, b) able to understand and comprehend in Bahasa Malaysia or English c) scores 91 in Modified Barthel Index (MBI) which indicates independency in daily life, d) scores below 7 in Geriatric Depression Scale (GDS) which signifies no depression and e) scores less than 2 in Dementia Rating Scale (DRS) which indicates absence of moderate or severe dementia.

3.2. Research instruments

3.2.1. The Malay Version of Pittsburgh Sleep Quality Index (PSQI)

According to Buysse et al. (1989), this self-rated questionnaire is designed to measure sleep quality in the clinical population. The original version (English) of Pittsburgh Sleep Quality Index (PSQI) is created by Buysse, Reynolds, Monk, Berman and Kupfer in 1989. This questionnaire consists of 24 questions. Out of 19 questions, they were self-rated questions. Each component scores between 0-3 points. The total index score is between 0-21. Poor sleep quality is indicated when index score of 6 and above. Score 5 and below indicate good sleep quality. PSQI has seven subsections which consist of subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medications, and daytime dysfunction. The PSQI has been proved to have strong internal validity (a coefficient alpha of 0.83) and temporal stability (0.85 for an average of 28.2 days) (Pilcher, Ginter & Sadowsky, 1997). Moreover, its validity and reliability have been proven in study of Agargun (1996) conducted in Turkey. The Malay version of Pittsburgh Sleep Quality Index has been used in other studies (Nazatul, Saimy, Moy, & Nabila, 2008) (Rashid et al., 2012) (Zahari, 2014).

3.2.2. The Malay Version of Short Form (36) Health Survey (SF-36)

SF-36 is a generic outcome measure of sickness 4 based on 36-items selected to represent eight health concepts (physical, social and role functioning, mental health, health perceptions, energy fatigue, pain and general health) (Kokinski, 1993). It was created by Ron, Cathy, Sherbourne and Mazel in 1995. The SF-36 is reported to be a sensitive measure of an outcome of care for numerous diseases and also sensitive to changes in health, in general, populations (Keller, 1998). Based on a study of Sararaks (2005), the study substantiates the applicability of the SF-36 concept in Malaysia, with a few caveats. The SF-36 Malaysia version has a high rate of data completion, with good quality data obtained not only in institutional settings but also in the context of self-administration in the general population. Sararaks (2005) said that Malay version of SF-36 could be used in Malaysia, with its acceptable
internal consistency and validity. The Malay version of SF-36 has been used in other studies (Imran Kamarul, Ismail, Naing, & Wan Mohamad, 2010).

3.2.3. The Malay Version of Saint Louis University Mental Status (SLUMS)
Saint Louis University Mental Status consisted of 11 questions and developed by Tariq, Tumosa, Chibnal, Perry and Morley (2006). This instrument consists of 11 items, and measures aspects of cognition that include orientation, short-term memory, calculations, naming of animals, clock drawing, and recognition of geometric figures. This instrument’s purpose is to screen individuals to identify the presence of cognitive deficits and also to identify changes in cognition over time. At the end of the assessment, the total score will indicate the level of cognitive whether it is normal, mild neurocognitive disorder (MNCD) or dementia (Tariq, Tumosa, Chibnal, Perry and Morley, 2006). For subject who has high school education, score 27-30 indicates normal, 21-26 indicates MNCD and 21 and below indicates dementia. For subject who has less than high school education, score 25-30 indicates normal, 20-24 indicates MNCD and 19 and below indicated dementia. SLUMS has excellent validity ($r = 0.75$) (Feliciano et al, 2013) and excellent convergent validity ($r = 0.83$) (Steward et al, 2012).

3.3. Data analysis

The descriptive statistic is used to describe the frequency, median (IQR) (Woodman, 2014). The inferential statistic is used to identify the relationship between demographic data with sleep quality and health status. In this section, test using Shapiro-Wilk test for normality was conducted because the sample of this study is less than 2000 (Tedeschi, 2006). Non-significant results of $p>0.05$ indicates a normal distribution of the data obtained while the significant value of $p<0.05$ indicates the data is not normally distributed (Pallant, 2007; Razali & Wah, 2011).

Multiple linear regression is used to determine the predictor of dependent variable which in this study is sleep quality. In a simple linear regression model, a single response measurement is related to a single predictor for each observation. The critical assumption of the model is that the conditional mean function is linear. Simple linear regression is also used to determine which variable to include in multiple linear regression. The p-value of 0.05 was fixed for significance.

4. Results

4.1. Descriptive and inferential analysis

There are 331 residents from eight of Rumah Seri Kenangan throughout peninsular Malaysia who consented to participate in the study and fit into the inclusion criteria. The sample consisted of 185 males (55.9%) and 146 females (44.1%). Ages ranged from 60 to 97 years with a median age of 67 years with IQR 63.00-74.00 years. 189 respondents (57.10%) are in the range of age 60-69 years old with a median age 64.00 and IQR 60.00-66.00. The normal group have 74 respondents (22.4%) with a median 65 years old and IQR of 62.00-70.00. For mild neurocognitive disorder group, they have 64 persons (19.3%) with a median 67 years old and IQR of 63.00-74.00. Dementia group have 193 persons (58.3%) with a median 70 years old with an IQR of 63.50-77.00 years old.

The length of stay in Rumah Seri Kenangan (RSK) ranged from a month (24.00, 12.00-36.00) to 240.00 months (20 years) (240.00, 240.00-240.00). The majority (241 persons) of the respondents (72.8%) have stayed in RSK from one month to 60 months with median (24.00, 12.00-36.00).

The Pittsburgh Sleep Quality Index (PSQI) score ranged from 0 to 16 with a median score of 6.00 (IQR 3.00-7.00). It scores $\geq$ five which indicates poor sleep quality (Buysse, Reynolds, Monk & Berman, 1989). It can be concluded that sleep quality among older persons in an institution is poor.

For sleep quality, all three groups have the same median score which is 6.00. A score above 5 indicates poor sleep quality. Therefore, the majority of older persons in the institution have poor sleep quality. Kruskal-Wallis Test revealed no significant difference in sleep quality between three groups of cognitive function (normal, mild neurocognitive disorder and dementia) among older persons in institutions (Group 1, n=74; Normal, Group 2, n=64; MNCD, Group 3, n=193; Dementia). $X^2 (n=331) = 0.10$, $p=0.95$ as shown in Table 1.
Table 1. Result of significant difference in sleep quality between 3 groups of cognitive function among older person in institutions by using Pittsburgh Sleep Quality Index.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Median (IQR)</th>
<th>sample</th>
<th>Chi-Square</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep quality</td>
<td>1. Normal</td>
<td>6.00 (3.00-6.00)</td>
<td>74.00</td>
<td></td>
<td>2.00</td>
<td>0.95</td>
</tr>
<tr>
<td></td>
<td>2. MNCD</td>
<td>6.00 (3.00-7.00)</td>
<td>64.00</td>
<td></td>
<td>2.00</td>
<td>0.95</td>
</tr>
<tr>
<td></td>
<td>3. Dementia</td>
<td>6.00 (3.00-6.50)</td>
<td>193.00</td>
<td>0.10</td>
<td>2.00</td>
<td>0.95</td>
</tr>
</tbody>
</table>

df = degree of freedom, P = probability, MNCD = Mild neurocognitive disorder

Table 2. Results of descriptive analysis of the health status among older persons in institutions by using SF-36.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Median (IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health status</td>
<td>Physical functioning</td>
<td>75.00 (55.00-90.00)</td>
</tr>
<tr>
<td></td>
<td>Role limitations due to physical health</td>
<td>100.00 (0.00-100.00)</td>
</tr>
<tr>
<td></td>
<td>Role limitations due to emotional problems</td>
<td>100.00 (100.00-100.00)</td>
</tr>
<tr>
<td></td>
<td>Energy/ fatigue</td>
<td>60.00 (50.00-75.00)</td>
</tr>
<tr>
<td></td>
<td>Emotional well-being</td>
<td>72.00 (60.00-84.00)</td>
</tr>
<tr>
<td></td>
<td>Social functioning</td>
<td>87.50 (75.00-100.00)</td>
</tr>
<tr>
<td></td>
<td>Pain</td>
<td>80.00 (67.50-100.00)</td>
</tr>
<tr>
<td></td>
<td>General health</td>
<td>70.00 (55.00-75.00)</td>
</tr>
</tbody>
</table>

4.2. Factor influence of sleep quality (Predictor)

Multiple linear regression has been used to determine factor influence of sleep quality (predictor). By doing this analysis, it helps in identifying predictor factors of a continuous dependent variable by controlling possible cofounders. In addition, it determines the relationship strength of each independent variable (Fletcher, 2009).

Predictor factors of sleep quality among older persons in institutions for respondents who have normal and mild neurocognitive disorder cognitive function is pain. Predictor factors of sleep quality among older persons in institutions for respondents who have Dementia is role limitation due to emotional problems, emotional well-being and pain with p<0.001 as shown in Table 3.

Table 3. Predictor factors of sleep quality among older persons in institutions

<table>
<thead>
<tr>
<th>Variables</th>
<th>Multiple Linear Regression</th>
</tr>
</thead>
</table>
The results indicate that the sleep quality and quality of life amongst older persons in institutions are poor which is aligned with the previous study in Turkey (Eser, Khorshid & Cinar, 2007; Orhan et al., 2012). Furthermore, previous studies indicate that there is a negative relationship between poor sleep quality and quality of life (Lo and Lee, 2012; Tel, 2013). There are several factors that could contribute to this situation.

The first factor is social isolation (Daglar, Pinar, Sabanciogullari, & Kav, 2014). Social isolation is a feeling of being an outcast (Kurina et al., 2011). Admission into nursing home or institutions is a new experience for the older persons (Rashid et al., 2012). This situation raises feeling grief due to feeling abandoned by family members which will lead to insomnia among older persons. This painful emotional grief which later not be shared with others will lead to loneliness and feeling helpless. Social isolation often associated with loneliness due to lack of social relationship with other occupants (Rashid et al., 2012). The previous study agrees that loneliness decreases sleep quality because of sleep fragmentation due to frequent awakenings (Kurina et al., 2011).

The second factor is lack of engagement in activity. Engaging in physical activity during the day is certainly helps in having better sleep at night (Stoica, 2015). Having lower levels of physical activity which involve movements could influence circadian rhythms like body temperature, hormone secretion and sleep/wake cycle (Gordon & Gladman, 2010). Lack of engagement in activity due to inactive lifestyles of repetitive daily routines, lack of physical exercise, and poor sleep practices like excessive time spent in bed and sleeping during the day could cause sleep disturbances (Ana-Maria, 2015; Ibrahim & Dahlan, 2015). Previous study agrees that older persons in institution prefer to rest all day and not to engage in any activity (Araújo & Claudia, 2010). In contrary, engagement in activities facilitates enhancement in quality of life (Dahlan & Ibrahim, 2015).

The third factor of poor sleep quality is environmental factor (Neikrug & Ancoli-Israel, 2010). Bright light is an essential environmental cue to stay awake and to enhance alertness among residents. It is because bright light helps synchronize and stabilize circadian rhythm (Neikrug & Ancoli-Israel, 2010). However, many older persons in institutions insufficiently exposed to bright light and some of them not exposed to bright light at all. Previous studies agree on bright light during night-time night also can cause sleep disturbance. To have good sleep, room should be dark with minimal light exposure. However, situation in institution is the occupants have to share room with other residents who not necessarily go to bed at the same time. As a result, the bright light will cause sleep difficulties. Noise is also important factors of poor sleep quality. Noise comes from various ways such as from staff, other occupants and squeaking food and medication carts and wheelchairs (Neikrug & Ancoli-Israel, 2010).

The fourth factor is deterioration in health. A decline in health always happens towards older persons due to ageing processes like arthritis, muscle weakness, hypertension and diabetes. It causes painful consequences in sleep disorder and sleep deprivation due to discomfort (Institute of Medicine, 2006). Pain emerged as the main predictor of sleep quality. According to Rodriguez, Dzierzewski, & Alessi (2015), the pain will affect sleep quality because it will cause discomfort in falling and staying asleep. There is a slight difference between a score of sleep quality between governmental funded institutions in Malaysia and non-governmental funded institutions in Malaysia. Sleep quality score in a governmentally funded institution is lower compared to sleep quality score in a non-governmental funded institution in Malaysia. Based on this study, the median score of Pittsburgh Sleep Quality Index among older persons in institutions in Malaysia is 6. Meanwhile, based on a study conducted at nongovernmental charity old folk’s home in Penang, Malaysia by Rashid, Ong & Wong (2012), the mean score of Pittsburgh Sleep Quality Index among older persons in the community in Malaysia is 7.1. Based on this comparison, the level of sleep quality

<table>
<thead>
<tr>
<th></th>
<th>Adjusted b (95%CI)</th>
<th>t statistics</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain (Normal)</td>
<td>-0.036 (-0.062, -0.010)</td>
<td>-2.744</td>
<td>0.008</td>
</tr>
<tr>
<td>Pain (MNCD)</td>
<td>-0.059 (-0.092, -0.026)</td>
<td>-3.595</td>
<td>0.001</td>
</tr>
<tr>
<td>Role limitation due to emotional problems (Dementia)</td>
<td>-0.031 (-0.041, -0.021)</td>
<td>-6.251</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Emotional well-being (Dementia)</td>
<td>-0.084 (-0.108, -0.059)</td>
<td>-6.778</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Pain (Dementia)</td>
<td>-0.067 (-0.084, -0.050)</td>
<td>-7.816</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

MNCD = Mild neurocognitive disorder
between older persons in governmentally funded institutions is better than in a non-governmental funded institution. This situation is due to many of the respondents in non-governmental funded institution have chronic illnesses compared to respondents in a governmentally funded institution. The PSQI score for those who have chronic illnesses is significantly higher than respondents without chronic illness. Chronic illness can affect sleep quality due to modifying nocturnal sleep pattern (Bonanni et al., 2010).

The fifth factor is cognitive impairment. Cognitive impairment is associated with declining of functional status (Cole et al., 2009). In this study, there is no significant difference in sleep quality among three groups of cognitive function (normal, MNCD and Dementia). This result could be due to the similarities in the eight institutions understudy in the area of the living environment, i.e. communal living environment. Furthermore, the institutions are administered by the same organisation. Hence, there is a similarity in terms of routines, occupancy classification, types of meals prepared and given. Previous studies disagreed with the result and said that there is significant difference in sleep quality among the groups of cognitive functions (Fischer, Hallschmid, Elsner, & Born, 2002; Cole et al., 2009). Those studies stressed that this situation is due to unbalance "sleep flip-flop switch" which cause daytime sleepiness and fragmented sleep at night (Cole et al., 2009).

The sixth factor is depression. Many previous studies agree that depression will cause poor sleep quality like insomnia syndrome (Al-Jawad, Rashid, & Narayan, 2007; Bonanni et al., 2010). Chronic insomnia may increase the risk of developing a mood disorder like anxiety. Anxiety increase agitation and arousal during sleep time and difficulty to falling asleep leads towards sleep deprivation. Studies have shown that sleep deprivation has significant effect on mood and mental state. Depression can be reduced by involving in physical activity to reduce the anxiety (C. Y. Wu, Su, Fang, & Yeh Chang, 2012).

Those six factors are the reasons for poor sleep quality. Poor sleep quality can affect quality of life. Many previous studies agree that good sleep quality has strong association with good quality of life (Ribeiro Do Valle et al., 2013). Good sleep quality plays an important role for good quality of life.

6. Conclusion

The study found that the sleep quality and quality of life amongst older persons in institutions is poor. Health care professionals should consider improving sleep quality to facilitate enhancement in quality of life amongst older persons in institutions.

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