

PHYSICAL ACTIVITY EFFECTS ON SLEEP QUALITY OF MALE ADOLESCENT PRISONERS

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Abstract: Problems have brought many adolescents in the prison. Their cohorts pass the day with freedom, while adolescents prisoners must spend months or years without freedom and other developmental tasks at their ages. This may cause many mental health issues on them. This study explored the effects of physical activity using group-based Games on quality of adolescent prisoners. Participants of this study were 24 male adolescent prisoners (aged between 14-18 years old). These participants showed many behavioral and emotional problems before entering and during their time in prison, such as: family problems, drug abuse, problems with peers and officers. Participants had three sessions of game activities in one week. This experimental study measured sleep quality with the adapted *Sleep Quality Scale* (Shahid, Wilkinson, Marcu & Shapiro (eds), 2012) which comprises 25-items (Cronbach $\alpha = .916$) after statistical adaptation processes. It was conducted using a pretest-posttest design. This study suggested that group-based games can increase sleep quality, paired sampel t-test value ($t = -5.527$; $p < .001$). Posttest data ($M = 37.50$; $SD = 7.84$) higher than pretest data ($M = 28.83$; $SD = 7.76$). It can be inferred that many other conditions affecting can be intervened through these physical activities. Further study should develop a more detailed module for intervention with longer time for carrying out experiment to get better result for the inmates.

Keywords: prisoners, male, teenagers, physical activity, sleep quality.

INTRODUCTION

Adolescence is one of life-span phases in which they must undergo many new developmental tasks in personal and social demands. Teenagers must do their personal

tasks, such as: autonomy to regulate behaviors, manage their self-image, maintain body image, making decision and solving problems (Salkind, 2006; Christie & Viner,

2005; Lindenmann, 2006), experience puberty which activates several parts of the brain (Blakemore, Burnett & Dahl, 2010) and social tasks, like: planning career with support of parents (Roger, Creed & Praskova, 2016), having peer relationship for adjustment process (Swenson, Snordstrom, & Hiester, 2008). Those developmental tasks need to be performed during this lifespan as Eriksson theory of autonomy during adolescence in order to form their identity (Kimstra, Hale, Raaijmakers, Branje, Meeus, 2010). Yet, those tasks must be done during this period of lifespan as the teenagers have moved to later periods of development.

The inability to do the developmental tasks at their age will affect their future and mental health (Bowen, 2005), for instance the career plan. The teenagers who can't graduate formal education will make them difficult to make money from proper job and make proper money for family. And, financial problem may be one factor causing mental health problem like suicide although many other factors also contribute (Coope, et al., 2015; Hempstead & Phillips, 2015). It proves that there will be further consequences to occur when the developmental tasks cannot be performed. Besides, another issue in adolescents related to developmental task and mental health is about delinquency. Many teenagers are

involved in delinquency and crimes. Some of them are sentenced to prison through juvenile court and they must spend months or years inside the prison. This may reach over 2.000 cases in Indonesia (Zuraya, 2017). As they have lived for so long in the prison, studies confirm many many mental health issues in there, such as: maladjustment (Steiner & Meade, 2016). But, it's not found a number of studies of how to help them healthy mentally inside the prison and enable to survive in the community after reentry phase. They are not accepted by community as they find it difficult to make money, no employment, financial problems and family connection (Garland, Wodahl & Mayfield, 2011). It indicates that prisoner needs something important based on their developmental task during the process in the prison to anticipate relapse (Durnescu, 2018).

On the other hand, those prisoners have many mental health problems inside the prison. They undergo many things and one of them is having sleep problems like insomnia (Elger, 2003; Goudard, Lalande, Bertin, Sautereau, Borgne & Cabelguenne, 2017), maladjustment based on the length of sentence (Toman, Cochran, Cochran & Bales, 2015), and other mental health issues. Sleep problem may cause several disturbances on physical and psychological health (Lund, Reider, Whiting, & Prichard, 2010). The

impacts of sleep problem have been examined in many situations, such as: work in hospital (Melo, Medeiros, Bruin, Lima & Daher, 2016) and it may cause social problems like, work productivity (Matsuzaki, et al., 2017). Based on the above explanation, researchers agreed the idea of physical activity will affect sleep quality. A different finding (Hoffeld & Ruthig, 2014) mentioned that sleep quality contributes to good physical activity. It can be inferred that the interaction between sleep quality and physical activity will shape better mental health. The change life style between inside and outside the prison may cause the alteration of sleep quantity. This alteration may be predicted to affect personal sleep quality, although the study found different result (Pilcher, Ginter, & Sadowsky, 1997). Besides, physical activities are considered to inter-influence mood and physical activity that will enhance daily functioning and reduce stress and other mental health problems (Backmand, Kaprio, Kujala, & Sarna, 2009).

The accumulation of unfinished developmental tasks and mental health problems before and during their imprisonments may bring them to have sleep quality problems. While, Triantafillou, Saeb, Lattie, Mohr & Kording (2019) suggested that the sleep quality has correlation with mood. It indicates that there is correlation of

sleep quality, mood and to cope with the problem and physical activity may be an alternative for the solution.

On the basis of previous explanations, this study is expected to have more understanding about the effects of physical activity to the alteration of mood that increases sleep quality among the adolescent prisoners who have history of mental health problems that leads them to have negative mood in their daily activities in the prison. study.

METHOD

Researcher used experimental study with pretest-posttest group design for this study. The study was carried out inside the prisoner with outdoor activities. There were 24 male teenagers (age range 14-18 years old) participating in this study. These participants were sentenced for many crimes such as: drugs, sexual behavior, theft. Sleep quality was measured using adapted-Sleep Quality Scale (SQS) of Shahid, Wilkinson, Marcu & Shapiro (eds), (2012). Sleep Quality Scale (SQS) comprises of 25-items (Cronbach $\alpha = .916$) validated in Indonesian language.

The games were designed based on the idea of combining the concept of physical activity and mood that is thought to enable to influence sleep quality of the teenagers. The games were run in group to increase participation and attachment among the

participants. And, to ease facilitators in guiding participants during the games, another protocol was made before running the intervention: building rapport and interview about personal data. The process of building rapport was done to all participants in about three sessions. The second one, participants were interviewed by the facilitator before intervention was conducted. Facilitators asked participants about their personal data, such as: personal information (name, date of birth, age, number of siblings, educational status, parenting experience from parents, parental history of divorce, family financial status, history of crimes done, the length of sentence), and other relevant information: activities inside the prison, problems with people inside the prison, personal emotional problem, things liked and disliked inside the prison.

The study was done three sessions in a week. Each session took maximum two hours to play. Participants were informed about the process of study. Participants then agreed to participate in this program. Participants filled in the SQS to get the baseline data about their sleep quality. Facilitators then divided participants into four groups and certain game was played by individually. Each group must pass through four spots. Facilitators in each group made one game for two groups and they must compete to finish the game

instructed to them. Participants again filled in the scale after completing three sessions of group games.

There were four games played in this experiment. Two games were played individually and the other ones were in group. First, *kejar-kejaran* (running after) in which one person became person in duty to catch other participants. He may choose the person to run after. The target person had to escape from being touched by the person in duty. This participant will be replaced by another person as he was able to touch certain body part of another participant. This cycle was repeated and the one who became the most often person in duty will be considered to lose the game. The second one is *Jangan Sentuh Tali* (Don't Touch The Rope). This game needed two groups. One group played and another one distracted this group. One participant should pass through a simple labirin made of rope. This participant could not touch the rope to win the game. The challenge was this participant's eyes were closed with a scarf. His group members gave direction (the left, the right, ahead, stop). Other group distracted this participant (e.g. mentioned wrong direction, made noise). Participant who reached the target spot became the winner for the game.

There were two group games and the first one was *gigit ekor ular* (bite the snake tail).

The participants were two groups and they made a line. The front participant was considered as the snake head and the person at the back was considered as the snake tail. the instruction was the snake head should stab the baloon at the person of snake tail with a needle. The winner was the snake head who broke the baloon first. Another criterion for the winner was each line should be separated at all. The snake who was separated would be the loser.

The last game was *jaring laba-laba* (spider net). Facilitator provided a net made of rope like a spider net. Each group had to send each group member from one side to another side through the net. The participant's body could not touch the rope. All group members should make ideas to help their friend pass through the net. The faster group became the winner.

Researchers asked participants to fill in the SQS again for posttest data after the intervention was carried out. The posttest data were taken one day after the intervention.

RESULT AND DISCUSSION

Result

Based on the statistical measurement, the study found that male teen prisoners had lower score in sleep quality in baseline condition and it increased after the intervention. The complete data can be seen in the table.

Paired sample t-test value ($t = -5,527$; $p < .000$) shows that significant difference of participants' sleep quality after intervention of group-based physical activities. The mean difference score ($MD = -8.67$), and shows that the pretest mean score is lower than posttest. Statistical measurement showed that group-based physical activity run on them contribute to the increase of sleep quality (posttest ($M = 37,5$; $SD = 7,84$) shows higher mean score than pretest ($M = 28,83$; $SD = 7.76$). The change of mean score from pretest ($M = 28.83$) to posttest ($M = 37.5$) explains the sleep quality of adolescent prisoners increases in posttest better than the pretest after intervention of group-based physical activities. It can be inferred that group-based physical intervention improves sleep quality in adolescent prisoners.

Tabel 1. Difference of Sleep Quality

No	Phase	Mean	Deviation Standard
1	Pretest	28.83	7.76
2	Posttest	37.5	7.84

Tabel 2. The Impact of Sleep Quality in Pretest and Posttest

Pretest-Posttest	Mean	Deviation Standard	T-Score	Sig.
	-8.67	7.68	-5.527	0.000

Discussion

Participants had many behavioral dan emotional problems. the following pie chart informs about the list of problems occurring to all participants and the crimes they are committed to.

The data above indicates that participants have many problems personally and with other people. Those problems made them unhappy as their motivation was directed to problem or revenge. Riyono (2013) mentioned that the unhappy situation will appear as people think about the problem to material, self and others. Material means that when human motivation is for money or jewelry, they will be unhappy in life. When someone becomes selfish and hope to other people, they will be also unhappy. And the happiness will come only when people do something with virtues wanted by god.

In these participants, they had many problems in life. Their problems with other (parents, peers, officers) and self (the need for revenge, consumed illegal drugs) made them unhappy and saved the problems in mind. Problems will lead people to have negative emotion and may also cause sleep

quality problem. Study shows that women who got intimate partner victimization (IPV) has more risk to get lower sleep quality (Newton, Burns, Miller & Fernandez-Botran, 2015). And it may lead them to inability to solve problems they have. Athletes who have no problem with daily function tend to do mental imagery, which is necessary to use during the match, fo successful competition (Shearer, Bruton, Short & Roderique-Davis, 2017). If so, having sleep quality is important to help people have sleep quality and better mental health. One intervention to help solve this problem is doing physical activity. Physical activity program is thought as one of factors increase sleep quality and quality of life in elderly (Freburger, Callahan, Shreffler & Mielenz, 2009). The logic needs to tested in different lifespan. And, this study examined the effect of physical activities on sleep quality male teenagers in the prison. Adolescents have sleep quality problem in many countries (Lai & Ma, 2019).

The increase of sleep quality in this study need more explanations of condition before and after intervention. There are several factors may cause it, for instance:

environmental factor, affect factor. This study focused on the effects of physical activity on sleep quality. But, literatures mentioned that sleep quality is also influenced by many situational factors. These young prisoners used to sleep at home with family and as they had to move to other environment outside of their homes, they needed to adjust with it. It is in line with Kim, Cun & Han (2010) who stated that the change of sleep environment as temperature, humidity and season will affect the sleep quality. In this case, the situation inside the prison is different from what they used to do. Some inhabitants usually sleep in warm bedroom at home as they are from rich family and some others are not. They feel the changes in bedroom facilities inside the prison.

This experiment suggested that physical activity might enhance sleep quality. Potter, Howell, Dahab, Sweeney, Albright & Provance (2020) argued that physical activity would benefit the Quality of Life (QOL). Potter et al., (2020) also concluded that poor sleep would make QOL worse. It could be understood that prisoners had less activities inside the prison. They cannot freely exercise as they have to run many rules determined by the officers. In certain times they must stay inside the room and it will not allow them to have proper physical activities. The consistent physical activities

needs to be designed as the routine program for them to improve their sleep quality. Another study suggested that in normal situation people spend a-third of day for work and another third for having a rest (Burguard & Ailshire, 2009). Burguard & Ailshire (2009) concluded that having bad days during their work will affect sleep quality. Having fun activities with friends were expected to make participants happy and this happiness is expected to help increase their sleep quality.

Emotional problem occurring in participants may be the source of lower sleep quality. Many of them have been involved repeated use of drugs, committed to raping behavior, theft. Those behaviors indicate that they have many emotional problems. And, Newton, Burns, Miller & Botran (2015) mentioned that emotional problems like divorce and other problems with spouse may cause lower sleep quality. In this case, emotional problems related to the crimes they have done may be considered to contribute to sleep quality problems. In this condition, sleep quality is necessary to make things better. Shearer, Bruton, Short & Davies (2017) stated that good sleep quality in athletes will enable them to have imagery (to do several behaviors which are related to cognition, behavior and thought) better. For

participants, it can be inferred that, their emotional problem may be intervened during the sentence times. It can be expected that they can have better cognition and thought through programs inside the prison before reentry process.

There is a question in this study that which one is more effective, group-based or personal game? We choose a group game in this study. Another study found that group activity was useful to enhance physical activity program (Batra, Palmer & Bastida, 2018). In our study, each participants work together to solve the problem and they shared happiness each other. They made physical and emotional interaction through the game and they became more disclosure during these activities. In this context, researchers thought that sharing emotion and having partners in doing certain activity may contribute to this success. Sharing emotion in this case will occur when a person interact with others. And the interaction will allow symmetrical emotion through disclosure (Hadley, 2014).

CONCLUSION

All participants were sentenced into prison for many crimes they are committed to, like: murder, rape, theft, drug abuse. Besides, participants also had many personal problems in family setting

(parenting problems, financial problems, problem with peers). It made them have sleep quality problem. Physical activity intervention contributes in increasing the sleep quality of male teenager prisoners in this study. Most participants showed higher score of sleep quality in posttest. Based on literature study, the increase in sleep quality score may be caused by several internal situations of participants, like: the interaction atmosphere among participants during the games, their state of emotion during the games. Besides, the environmental factors related to sleep quality and physical activity may also influence the results, such as: bed environment (temperature, humidity), daily activities inside the prison.

Results suggest that physical activity contributes to the prisoners' sleep quality. It indicates that physical activity has changed the participants' mood and fix sleep quality. For, further research, developing a specific module for physical activity intervention for inmates at LPKA (prison for teenagers) should be done and another study can be carried out to evaluate its effectiveness on mood and sleep quality. While, as the number of participants and the duration of time for research was still limited, further study should be run properly to get the data about its effectiveness on the quality of

mood and sleep quality of teenagers at the prison.

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