Increasing the quality of life of post-shackling patients through multilevel Health promotion of shackling prevention

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ABSTRACT

Introduction: Shackling still poses a significant obstacle to rehabilitate patient with mental disorder and often resorted by family or community. Shackling could have a negative impact toward patient's mental health and often resorted due to lack of information. Therefore, this study aimed to evaluate the effect of multilevel health promotion to shackling prevention (MHPSP) toward the behavioral component of family/caregivers, neighbors, cadres, and health workers (stakeholders) and also evaluating its effect toward patient's quality of life.

Method: This study uses a quasi experimental method with pre-test and post-test model with repeated measures design. The research subjects were 32 post-shackling patients lived in Sukoharjo Regency and 31 from Klaten Regency as well as. MHPSP was given to 32 caregivers and stakeholders who come from Sukoharjo Regency as a treatment group and psychoeducation only to 31 caregivers of control group from Klaten Regency. Quality of life measurements were carried out before treatment and four months after giving MHPSP.

Result: The result showed that MHPSP significantly enhance the behavioral component of the family/caregivers as well as neighbors, cadres and health workers (p<0.05). Furthermore, patient quality of life was significantly improved in the treatment group (MHPSP) compared to the control.

Conclusion: It can be concluded that MHPSP could significantly enhance the behavioral aspects of the families, neighbors, and health workers toward post-shackled PMD patients and significantly improved their quality of life. Therefore, MHPSP is needed to be implemented not only to the patient but also to the people that directly interact with them.

Keyword: Multilevel health promotion, post-shackling patients, behavior, patient's quality of life.

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INTRODUCTION

Shackling usually pursued as the last approach to restrain person with mental disorder (PMD) often to prevent any harm to other family members.1,3 Several reasons that commonly found among families or communities of the shackled PMD are the inefficiency of the treatment or deteriorating condition, financial issue regarding treatment cost, and the mental hospital that often located far away from the location of PMD. In addition, difficulties to surveillance the PMD or the tantrum tendency of the PMD are also included as main reasons of the family to resort shackling.4

In Indonesia, the prevalence of shackling among PMDs are still considerably high which often resorted by family or community members. On the other hand, a regulation about mental health has been devised in Mental Health Act No. 18 of 2014 but it is not yet optimally implemented. Furthermore, the law on human rights is also not yet integrated into the policies and procedures. Therefore, the risk of human rights violations is still considerably high especially for vulnerable population such as PMDs.5 Although the officials have acknowledged that shackling is a kind of human rights violation, the government continues to have difficulty in eradicating this practice and many of the cases goes unreported.

According to the World Health Organization (WHO), the quality of life (QoL) is an individual’s perception of the position of life in a system of values and culture in which they live, and it is related to their goals, hopes, standards and concerns. Family and community social support are needed to improve their QoL.6 The participation of the family as a patient’s caregiver is an important area of nursing and mental health promotion is a mandatory education to be given to them. Some studies showed that mental health education in families has a positive impact in reducing recurrent rates of mental disorders.7,8 There is also evidence that improvement in community mental health proved to be a superior to the hospital care.9 Several studies have shown that community involvement has proven to be more effective in treating the PMD.10,11 Therefore, this study aimed to analyze the effect of multilevel health promotion for shackling prevention (MHPSP) toward behavioral components of the
families or caregivers and stakeholders as well as its effect toward post-shackling patient's QoL in Sukoharjo District and Klaten Regency, Yogyakarta, Indonesia.

METHODS

Study Design and Sampling
This study used quasi experimental methods with nonequivalent control group and repeated measured pre-test and post-test design.\textsuperscript{16,17} The population of this research was 37 families of post-shackling patients who lived in Sukoharjo District and treated in the RSJD "Dr. Arif Zainudin" Surakarta, and 34 families and post-shackling patients who lived in Klaten District and treated in the RSJD "Dr. RM Soejarwadi" Klaten in 2012-2015. Overall, 32 post-shackling patients and their families from Sukoharjo Regency and 31 post-shackling patients and families from Klaten Regency were included in this study. Sampling was carried out by using purposive sampling technique with inclusion criteria:

1. The recorded post-shackling patients in Surakarta and Klaten Mental Hospital who lived in Sukoharjo or Klaten Regency.
2. Lived with their family (at least with wife/husband, father, mother, sister, brother and child) as a caregiver.
3. Always admitted to outpatient/control in the last three months.
4. Willing to be a participant.
5. Signed informed consent forms.

Training Program
MHPSP was given twice, first by having private family discussion with question and answer as well as intervention for preventions of relapse, and the second was by using brochures, posters, booklets, and films to promote greater awareness. In the treatment group applied in Sukoharjo Regency for the second intervention, the treatment was a collaborative training between families, and stakeholders where their homes were close to those with PMD. Meanwhile in the control group, the intervention was given only to 31 families/caregivers in Klaten District. The QoL was measured before treatment and 4 months after treatment.

RESULTS
32 caregivers in families of post-shackled patients from Sukoharjo Regency as a treatment group, and 31 caregivers of post-shackled patients from Klaten Regency were involved in this study as treatment and control group, respectively. Initially, homogeneity test (Levene’s Test) were conducted to examined the characteristics of respondents. Table 1 and 2 summarized the result of homogeneity test between the control and treatment group.

According to Table 1, more than half of post-shackling patients were male aged between 20-40 years and mostly had elementary education. Most patients were treated for 5 - 10 years as PMD with more than half of the respondents were shackled for 1-3 years and 3-5 years. The sample baseline characteristics were considered homogenous because no significant differences were found in comparative analysis between treatment and control group.

At the level of the family/ caregiver, more than half of them are female caregivers aged between 41-65 years and had high school education. Most of them are housewives and the parents of the patients (Table 2). No significant differences were found in the family's baseline characteristics and the variances were considered to be homogeneous.

The Effect of health promotion to behavioral changes of the caregivers
Before conducting a different test, all research data variables were first tested for normality by using the Kolomogorov Smirnov. The results of the data normality test showed that all research data variables were normally distributed. The paired sample t-test was used to assess the difference in average values during pre-test, post-test 1, and post-test 2, while independent t-test was used to assess the average values between the two groups in every observation.

Table 3 shows the results of the statistical tests on the initial observation of all components of family behavior in the two groups. According to the result of the independent t-test on observations at post-test 1 and post-test 2, it appears that almost all components of behavior are homogeneous. The mean values of the behavioral component at post-test 1 and post-test 2 were not different, except at post-test 2 on subjective norms and at intention of post-test 2. Furthermore, when the post-test 1 and 2 were compared, the mean value of the intention of the treatment group was better than in the control group.

The effect of the interventions was analyzed twice by using repeated Anova tests. It showed that there were significant differences in the mean values
## Table 1  Homogeneity test of post shackling patients baseline characteristics

| No | Characteristics                  | The Groups | Intervention (n = 32) | Control (n = 31) | N= 63  | %  | p value |
|----|----------------------------------|------------|----------------------|------------------|--------|----|---------|
|    |                                  |            | %                    | %                |        |    |         |
| 1. | Gender                           |            |                      |                  |        |    |         |
|    | Man                              | 15         | 47                   | 18               | 42     | 33 | 52      | 0.475 |
|    | Woman                            | 17         | 53                   | 13               | 58     | 30 | 48      |
| 2. | Age                              |            |                      |                  |        |    |         |
|    | a. 20-40 y                       | 25         | 78                   | 17               | 55     | 42 | 67      | 0.224 |
|    | b. 41-65 y                       | 5          | 16                   | 13               | 42     | 18 | 28      |
|    | c. > 65 y                        | 2          | 6                    | 1                | 3      | 3  | 4       |
| 3. | Education                        |            |                      |                  |        |    |         |
|    | a. no school                     | 3          | 9                    | 3                | 10     | 6  | 10      | 0.127 |
|    | b. Elementary                    | 16         | 50                   | 9                | 29     | 25 | 40      |
|    | c. YHS                            | 9          | 28                   | 7                | 23     | 16 | 25      |
|    | d. SHS                            | 4          | 13                   | 12               | 39     | 16 | 25      |
| 4. | Length of stay in hospital       |            |                      |                  |        |    |         |
|    | a. 1-5 y                         | 1          | 3                    | 4                | 13     | 5  | 8       | 0.062 |
|    | b. 5-10 y                        | 12         | 38                   | 8                | 26     | 20 | 32      |
|    | c. 10-15 y                       | 7          | 22                   | 5                | 16     | 12 | 19      |
|    | d. 15-20 y                       | 9          | 28                   | 7                | 23     | 16 | 25      |
|    | e. 20 y                          | 3          | 9                    | 7                | 23     | 10 | 16      |
| 5. | Length of Shackled Period        |            |                      |                  |        |    |         |
|    | a. 0-1 y                         | 0          | 0                    | 2                | 7      | 2  | 3       | 0.204 |
|    | b. 1-3 y                         | 10         | 31                   | 13               | 42     | 23 | 36.5    |
|    | c. 3-5 y                         | 13         | 41                   | 10               | 32     | 23 | 36.5    |
|    | d. ≥ 5 y                         | 9          | 28                   | 6                | 19     | 15 | 24      |

Source: Data of analysis results  
*JHS = Junior high school  
** SHS = Senior high school

## Table 2  Homogeneity test of patient’s family baseline characteristics

| No | Characteristics                  | The Groups | Intervention (n = 32) | Control (n = 31) | N= 63  | %  | p value |
|----|----------------------------------|------------|----------------------|------------------|--------|----|---------|
|    |                                  |            | %                    | %                |        |    |         |
| 1. | Gender                           |            |                      |                  |        |    |         |
|    | Man                              | 3          | 9                    | 20               | 64     | 23 | 36      | 0.001 |
|    | Woman                            | 29         | 91                   | 11               | 36     | 40 | 64      |
| 2. | Age                              |            |                      |                  |        |    |         |
|    | a. 20-40 y                       | 6          | 19                   | 11               | 36     | 17 | 27      | 0.966 |
|    | b. 41-65 y                       | 26         | 81                   | 15               | 48     | 41 | 65      |
|    | c. > 65 y                        | 0          | 0                    | 5                | 16     | 5  | 8       |
| 3. | Education                        |            |                      |                  |        |    |         |
|    | a. No School                     | 0          | 0                    | 4                | 13     | 4  | 6       | 0.257 |
|    | b. didn’t finish on primary school | 0        | 0                    | 1                | 3      | 1  | 2       |
|    | c. Elementary                    | 6          | 19                   | 5                | 16     | 11 | 17      |
|    | d. JHS*                           | 6          | 19                   | 8                | 26     | 14 | 22      |
|    | e. SHS**                          | 18         | 56                   | 12               | 39     | 30 | 48      |
|    | f. Diploma                       | 2          | 6                    | 1                | 3      | 3  | 5       |
### Table 3  The result of the comparison of behavioral components measurements before and after treatment.

| Behavioral components | Groups | Pre-test | Post-test 1 | Post-test 2 | Different test inter-repeatead intervention (p) |
|------------------------|--------|----------|-------------|-------------|-----------------------------------------------|
|                        |        | The average value & deviation | The average value & deviation | The average value & deviation |                                                |
| Knowledge              | Intervention | 16.63±1.45 | 18.13±2.69 | 20.03±1.67 | 0.001                                          |
|                        | Control   | 17.32±3.78 | 18.03±2.84 | 19.68±2.22 | 0.010                                          |
| Post-hoc ρ-value       | Intervention | 0.335     | 0.896      | 0.478       |                                                |
|                        | Control   | 0.896     | 0.478      |             |                                                |
| Attitude               | Intervention | 59.13±5.19 | 62.38±4.15 | 66.78±4.27 | 0.001                                          |
|                        | Control   | 57.77±6.02 | 62.06±7.37 | 65.52±3.83 | 0.001                                          |
| Post-hoc ρ-value       | Intervention | 0.343     | 0.767      | 0.221       |                                                |
|                        | Control   | 0.767     | 0.221      |             |                                                |
| Behavioral tendencies  | Intervention | 55.75±6.07 | 58.72±3.62 | 58.75±4.02 | 0.016                                          |
|                        | Control   | 54.42±6.47 | 59.00±6.83 | 58.03±5.72 | 0.014                                          |
| Post-hoc ρ-value       | Intervention | 0.403     | 0.838      | 0.566       |                                                |
|                        | Control   | 0.838     | 0.566      |             |                                                |
| Subjective norms       | Intervention | 76.56±6.64 | 80.03±3.31 | 80.31±4.29 | 0.005                                          |
|                        | Control   | 73.00±8.22 | 78.58±4.39 | 76.93±6.42 | 0.004                                          |
| Post-hoc ρ-value       | Intervention | 0.063     | 0.144      | 0.017       |                                                |
|                        | Control   | 0.144     | 0.017      |             |                                                |
| Self Efficacy          | Intervention | 77.62±7.01 | 82.28±7.75 | 82.84±7.30 | 0.010                                          |
|                        | Control   | 76.45±11.01 | 81.97±8.97 | 82.09±6.36 | 0.015                                          |
| Post-hoc ρ-value       | Intervention | 0.615     | 0.869      | 0.627       |                                                |
|                        | Control   | 0.869     | 0.627      |             |                                                |
| Intention              | Intervention | 64.03±5.29 | 79.50±8.27 | 82.22±4.18 | 0.001                                          |
|                        | Control   | 64.52±6.99 | 73.03±12.51 | 76.52±13.02 | 0.001                                          |
| Post-hoc ρ-value       | Intervention | 0.757     | 0.018      | 0.022       |                                                |
| Family social support  | Intervention | 54.21±7.70 | 60.90±6.25 | 62.53±4.76 | 0.001                                          |
|                        | Control   | 53.13±11.25 | 58.42±5.63 | 58.87±6.92 | 0.013                                          |
| Post-hoc ρ-value       | Intervention | 0.655     | 0.114      | 0.017       |                                                |

Source: Data of analysis results
Effect of health promotion on change in knowledge, attitudes, and behavioral tendencies of stakeholders

There were respondents who represent certain levels in the treatment group, such as the level of neighbors/community leaders, cadre levels, and the level of health workers (stakeholders). The difference in average values of knowledge, attitudes, and behavioral tendencies in stakeholders during pre-test, post-test 1 and post-test 2 can be seen in Table 4.

According to the Table 4, the result can be interpreted as follows:

1. Knowledge, attitudes, and behavioral tendencies of neighbors/community leaders statistically increased between pre-test and post-test 1. The average value of knowledge, attitudes, and neighboring behavioral tendencies also increased between pre-test and post-test 2. However, no differences were found in knowledge, attitudes, and behavioral tendencies of patient’s neighbors between post-test 1 and post-test 2.

2. Knowledge and attitudes of health cadres also increased both between pre-test and post-test 1 and pre-test and post-test 2, but the average value of behavioral trends in pre-test and post-test 1 and in pre-test test and post-test 2 are similar. However, between post-test 1 and post-test 2, no differences were found in the cadres’ knowledge, attitudes, and behavior. The average value of knowledge and attitude of health cadres who have home in near to post-shackling patients, were significantly different in pre-test and post-test 1 and in pre-test and post-test 2, but not for knowledge, attitudes, and behavior between post-test 1 and post-test 2.

3. Knowledge and the behavioral tendency of health personnel, such as nurses on duty at the public health care and midwives, increase in both pre-test and post-test 1, and in pre-test and post-test 2. However, there were no differences in knowledge, attitudes, and behavior in
The average value of knowledge, attitudes, and trends in the behavior of health workers are different in pre-test and post-test 1, no differences were found between post-test 1 and post-test 2.

**The effect of MHPSp in the quality of life of post-shackling patients**
To evaluate the difference in scores of quality of life between the two groups, the independent samples test was used and the result is depicted in Table 5. According to the result, it appears that the quality of life in the two groups were comparable before intervention. However, after intervention (MHPSp in treatment group and psycho-education in control group), the average of quality of life score was significantly higher in treatment group. To note, all groups had increased quality of life score but the treatment group had significantly higher increase.

**DISCUSSION**
Shackling still poses significant health and social problem for PMD in Indonesia. Shackling is predicted to be quite high especially in rural areas and tends to be under reported. Close family members or community are often resort shackling to restrain the patients to avoid harming themselves and people around them. The most often reason of resorting shackling is the inability of the families to sought medication due to economic or geographical reasons. The other reason is lack of knowledge on how to manage PMD and how long the drugs will take affects.1-4,18

In our study, MHPSp was given to the family members to improve their knowledge and skill in supporting the therapy of PMD. However, no difference was found in the knowledge of family members in intervention and control groups at post-test 1 and post-test 2. Both groups have knowledge that is statistically the same at post-test 1 and post-test 2. Our findings is in concordances with other studies which stated that psycho-education therapy to family member tend to have intermediary effect in improving families knowledge to treat PMD better.19 The results of this study are also supported by other studies which explain that family psycho-education therapy increases family knowledge in recognizing problems and how to select proper health services.20

The increase of the average value of the family attitudes in the two groups in terms of acceptance, treatment and prevention of recurrence in schizophrenics also affected family beliefs, trusts, and even emotions. These effects were partly due to the shackling free films and the delivery of material by facilitators which can be directly accessed and copied by respondents and affected their belief and emotion. These belief, trust, and emotion are the basis for forming a better attitude.21 The emotional effect of the film was reported because some of the caregivers were break in tears when watching the film and conscience toward previous violence to PMD was the main reason for such response. This finding is supported by Xia et.al, that the psycho-education model in families and schizophrenic patients can gradually increase knowledge, attitudes, and skills of the caregivers to better treat the patients.22

Health promotion aims to change a person's behavior and lifestyle. The tendency of good family behavior has a function as a social support for sufferers in reducing a person's stress, specialized for schizophrenics. Knowledge, attitudes, and tendencies of family behavior that experience a change towards a better direction after joining MHPSp will have an impact on increasing parenting and family support for post-shackling patients in which it will reduce the recurrence frequency of schizophrenic patients and decrease the possibility of patients being returned to their shackles. It also enables the improvement of the QoL of patients after shackling.

Increase of awareness about subjective norms is also had a profound effect on treatment outcomes. One of the direct determinants of personal intentions is subjective norms that are related to behavior. Normative beliefs that determine one's subjective norms often state that other people are considered to be important by the individual. Community members tend to be doing those norms independent on their agreement to such norms especially if such behaviors are supported by community leaders, health cadres, and health workers. Ultimately, the adoptions of the norms will improve the behavior of the caregivers or family members toward PMD.23

The other aspect of the attitude that determine how family and community view the PMD is self-efficacy. Self-efficacy tend to be more prominent in higher educated people but also affected by individual experiences, social persuasion and physiological or emotional state.24 The results of this study demonstrate that MHPSp and psycho-education improved family's self-efficacy regarding the prevention of recurrence and shackling in Sukoharjo and Klaten Districts.

This study also proved that through MHPSp and psycho-education intervention, the intention of the family to humanely treat the PMD was improved. Similar finding also reported by Arteaga et al. (2018) who examined the effect of health promotion toward family intention toward pregnant women. They found an improvement in family...
intention towards pregnant women after getting a health promotion.\textsuperscript{25,26}

MHPSP and psycho-education also have positive effect in increasing intention in both groups. According to study based on the popular Health Belief Model, intention is the best predictor of behavior. Intention acts as a function of beliefs and other information about a person's tendency to behave, which typically will display certain behaviors. Intention regulates behavior and changes it into actions depending on specific situations and conditions.\textsuperscript{26,27}

The results of this study also proved that MHPSP could enhance family social support to family members who suffer from mental disorders. Ariani et.al (2014) supports our finding by stating that provision of health education enhances family social support for mental patients.\textsuperscript{27} Another study conducted by Sakellari (2014) examined the impact of health education on the perceptions of parents about mental disorders. It concluded that the provision of health education proved to influence the change in parents’ social support for mental disorders and the severity of the diseases suffered by their children as well as increased the overall quality of life of their children.\textsuperscript{28}

MHPSP also has been proven to have a beneficial effect on improving the quality of life of mental patients after shackling. The results of this study are supported by Ojio et al. (2015) who examined the effect of health education on improving mental health in middle school students, who experienced psychological disorders in schools.\textsuperscript{29} It demonstrated a positive effect on improving the severity of the mental disease of the patients. Another study was conducted by Thomas (2016) and Irannahedd also supported our findings that the health education resulted in significant improvement in mental health compared to pre-test.\textsuperscript{30,31}

CONCLUSION

The conclusion of this study is that MHPSP intervention given both in the treatment and psycho-education group as well as to the families of post-shackling patients, have comparable result in improving the quality of life of post-shackling patients. However, patient's quality of life who received MHPSP is better than the standard psycho-education group.

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CONFLICT OF INTEREST

All authors declared that there is no conflict of interest regarding the publication of this article.

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AUTHOR CONTRIBUTION

All author contributed equally in writing this articles.

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