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Staff Training Reduces the Use of Physical Restraint in Mental Health Service, Evidence-based Reflection for China

Junrong Ye[a], Aixiang Xiao[b,*,1], Lin Yu[a], Jianxiong Guo[c], Huawei Lei[c], Hongmei Wei[c], Wei Luo[c]

[a] Traditional Chinese Medicine Department, Affiliated Brain Hospital of Guangzhou Medical University, China
[b] Nursing Administration Department, Affiliated Brain Hospital of Guangzhou Medical University, China
[c] Medical Administration Department, Affiliated Brain Hospital of Guangzhou Medical University, China

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ABSTRACT

OBJECT: The purpose of this article was to synthesize the evidence regarding the reduction of physical restraint, and to seek some practical recommendations based on the current situation in China.
METHOD: Nine databases were retrieved; these were PubMed, CINAHL, MEDLINE, Trip Database, PsysINFO, Cochrane Library, CNKI (Chinese database), Wanfang (Chinese database) and CBM (Chinese database) respectively. The selected articles were screened manually, and the identified researches were appraised through Review manager 5.3.
RESULT: Eight studies (four randomized controlled trials and four quasi-experimental studies) published between June 2013 and May 2017 were selected. Risk ratios (RRs) with 95% confidence intervals (CIs) were used as the effect index for dichotomous variables. The standardized mean differences (SMDs) with 95% CIs were calculated as the pooled continuous effect. The outcome of meta-analysis suggested staff training reduced the duration (IV = −0.88; 95% CIs = −1.65 to −0.10; Z = 2.22; p = 0.03) and adverse effect (RR, 0.16; 95% CIs = 0.09 to 0.30; Z = 5.96; p < 0.00001) of physical restraint, but there were no statistical change in the frequency of physical restraint (RR, 0.74; 95% CIs = 0.43 to 1.28; Z = 1.07; p = 0.28). Noticeably, the result of pooled estimates from 3 RCTs suggested staff training had no effects on the incidence of physical restraint. (RR, 1.01; 95% CIs = 0.45 to 2.24; Z = 0.02; p = 0.99)
CONCLUSION: Staff training was an effective measure to minimize the duration and adverse effects of physical restraint. More studies are needed to examine the effectiveness of staff training in relation to reduce the prevalence of physical restraint. Furthermore, considering the nurse's education background in China, it is recommended to conduct a compulsory training program to reduce the unnecessary restraint.

INTRODUCTION

Physical restraint was defined as a manual approach to reduce one's physical movement (Putkonen et al., 2013). To some extent, physical restraint and mechanical restraint would be comprehended interchangeably. In mental health nursing, although physical restraint was an effective approach to manage the immediate risk, the application of physical restraint still resulted in ethical and clinical controversy particularly its requisites and abuse. However, the frequency of physical restraint varied from one study to another. A systematic review reported the incidence of physical restraint in psychiatric wards was 3.8% to 20%, which implicated physical restraint was frequently employed when patients posed critical risk to themselves or others (Putkonen et al., 2013). Furthermore, it was reported that the rate of physical restraint in the United States generally increased from 29.8% to 34.1% between 2007 and 2013, meanwhile, the duration of physical restraint fluctuated between 2 h and 3.7 h (Staggs, 2015). In mainland China (not including Hong Kong, Macao, or Taiwan), the use of physical restraint was even more prevalent. An investigation implemented in a psychiatric hospital of Changsha City asserted the frequency of physical restraint was 51.3% (Zhu et al., 2014).

Whereas the frequent application of physical restraint, further studies examined its effect on patients and nurses. Noticeably, various studies verified physical restraint caused adverse effects on patients and nurses. From the patients' perspective, it was evident that the bodily restraint would cause physical injury and psychological trauma to the patients. For one thing, physical restraint potentially led to a great number of physical injuries including skin injury, pulmonary disease,

* Corresponding author.
E-mail address: 543061910@qq.com (A. Xiao).
[1] Address: 36 Mingxin Road Liwan District, Guangzhou City, Guangdong Province 510370, China.

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deep vein thrombosis, nervous system damage, ischemic lesions, or even sudden death (Di Lorenzo, Miani, Formicola, & Ferri, 2014). For another, it was reported the restrained patient undergoes psychological trauma associated with physical restraint, including demoralization, fear, anger, and the loss of dignity(Lancaster, Whittington, Lane, Riley, & Meehan, 2008). From nurses' perspective, implementing restraint caused an ethical dilemma which was described as an inner conflict in their practice, leaving them the difficulty in coping with this issue (Stewart, Van der Merwe, Bowers, Simpson, & Jones, 2010).

In consequence, a great number of studies were conducted to explore potential measures in regard to reduce the use of physical restraint in mental health settings, and several approaches had been verified to be effective to decrease the incidence of physical restraint. The Mental Health Commission (MHC, 2014) of Ireland proposed eight strategies of reducing the application of physical restraint, including leadership, debriefing, staff training et al. Notably, MHC emphasized that staff training was the core of restraint reduction programme, and it explained the training programme helped nurses to acquire necessary skills to cope with workplace violence.

Considering the critical situation in China that physical restraint is prevalent, the author of this article suggested it was vital to implement a training programme in relation to reduce the use of physical restraint. Hence, the objective of this article is to verify the effectiveness of staff training in the reduction of physical restraint in mental health service, and to synthesize the convincing evidence with reference value for nursing practice in China.

METHOD

PICO QUESTION

The PICO strategy is formed as follows. Population: patients with mental illness. Intervention: relevant training for staff. Comparison: staff without specific training. Outcome: the use of physical restraint. The answerable question is: Does staff training reduce the use of physical restraint in mental health service?

SEARCHING STRATEGY

In this study, six English databases and three Chinese databases were searched, including PubMed, CINAHL, MEDLINE, Trip Database, PsysINFO, Cochrane Library, CNKI (Chinese database), Wanfang (Chinese database), and CBM (Chinese database). Search terms were physical restraint, reduce, reduction, train, training, staff, nurse(s), mental health, and psychiatric hospital (note: for the Chinese database, the key words were translated and retrieved accordingly). Inclusive criterion: the study was conducted in psychiatric unit, psychiatric hospital, acute admission ward, and mental health center; the study was randomized controlled trials or quasi-experimental studies; the study was published between June 2013 and May 2017; full text in English or Chinese. Exclusion: qualitative study; intensive care unit (ICU); nursing home; staff training was not the only intervention in the identified study.

DATA EXTRACTION

Two researchers independently screened the content of the identified articles, including titles, abstracts, and full text. And then decided whether the studies met the inclusion criteria. A third reviewer would be consulted in case that agreement had not been achieved. The extracted data included research information (including title, first author, and publication year), characteristics of the study (including sampling size, types of study), and outcome. The primary outcome examined in this meta-analysis was the characteristic of physical restraint, including its frequency and duration. The secondary outcome was the incidence of restraint induced adverse effect.

RISK OF BIAS AND QUALITY ASSESSMENT

The data of included studies will be extracted, and assessed the bias risk by adopting the Cochrane risk of bias assessment tool (Higgins et al., 2011). The selection bias, performance bias, detection bias, attrition bias, reporting bias, and other bias of included studies were appraised by two researchers. In regard to bias risk assessment, a judgment was assigned as “no”, “unclear”, or “yes” for each domain to indicate a high, unclear, or low risk of bias, respectively. Disagreement would be resolved by discussion. The Grading Quality of Evidence and Strength of Recommendation (GRADE) guideline was adopted to assess to quality of the evidence (Schünemann, Brożek, Guyatt, & Oxman, 2013). The methodological flaws, generalizability of outcomes to the targeted population, and effect will be addressed. The quality would be assessed for each outcome and assigned as high, moderate, low or very low via GRADEpro Guideline Development Tool (GDT).

STATISTICAL ANALYSIS

A table was created to narratively describe the characteristics and results of included studies. Quality assessment and risk of bias examination were conducted via Review Manager 5.3 (RevMan 5.3, Cochrane Collaboration, London, UK), the statistical analysis was imported to GDT for assessing the quality of evidence. The meta-analysis was pooled using a random-effect model (DerSimonian & Laird, 1986). Risk ratios (RRs) with 95% confidence intervals (CIs) were applied as the effect index for dichotomous data, for instance the incidence of physical restraint and its adverse effect. The standardized mean differences (SMDs) with 95% CIs were examined as the pooled continuous effect.

RESULT

STUDY CHARACTERISTICS

Totally, there were 143 related articles identified, including 96 in Chinese and 47 in English. And further studies focused on following up the citation in the found studies, the exact number of identified articles was eight. The process of screening was explained by the PRISMA 2009 Flow Diagram (see Flow Diagram 1). The evidence appraisal matrix (see Table 1) was utilized to extract the following elements of each study: source, type of study design, level of evidence (according to Melnyk and ineout overholt), sample and setting, method and data analysis, implication. Totally four researchers participated in extracting the data of identified studies.

Among the identified studies (N = 8), four randomized controlled trials and four quasi-experimental studies. The evidence appraisal matrix is demonstrated in Table 1. The identified trials were conducted in psychiatric hospital and psychiatric department of general hospital.

EFFECTS OF STAFF TRAINING

FREQUENCY OF PHYSICAL RESTRAINT

The restrained-to-whole sample ratio was employed to measure the frequency of physical restraint. The Mantel-Haenszel test was applied in this section. The risk ratio was adopted to measure the effect. Five studies offered data for this analysis (Blair et al., 2016; H. Chen et al., 2016; Z. Chen, Zhang, Zong, & Wang, 2014; Hou, Cai, & Xu, 2013; Kontio, Pitkänen, Joffe, Katajisto, & Välimäki, 2014), indicating there were no statistical change in the frequency of physical restraint in the nurses receiving training specific program (RR, 0.74; 95% CIs = 0.43 to 1.28; random-effect model; Z = 1.07; P = 0.28). (see Fig. 1)

Noticeably, when pooled estimates from 3 RCTs was conducted (Chen et al., 2016; Hou et al., 2013; Kontio et al., 2014), the result suggested staff training did not reduce the incidence of physical restraint. (RR, 1.01; 95% CIs = 0.45 to 2.24; random-effect model;

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