Impact of Indoor Games on Hospitalized Orthopaedic Patients’ Sense of Wellbeing

Abstract:

Introduction: Orthopaedic conditions require timely diagnosis, treatment and rehabilitation. Patients also experience poor quality of life because psychological distress commonly occurs after an injury. Such patients require long term hospitalization and may have a decline in sense of wellbeing. Play interventions have been widely used in relieving anxiety among hospitalized children however very little is known about its effectiveness among adult population. Therefore, the study aimed for empirical scrutiny of the effectiveness of non pharmacological and cost effective measures like use of Indoor games on improving sense of wellbeing among long term hospitalized orthopedic patients.

Objectives: The objective of the study was to assess whether indoor games was effective in improving the sense of wellbeing among long term hospitalized orthopaedic patients and if there was any association between sense of wellbeing and selected socio demographic variables.

Methodology: A quasi- experimental study with non-equivalent control, pretest post test design was selected. Study was conducted in Ramaiah Medical College Hospital, Bangalore for duration of 6 weeks. A total of 60 participants were assigned into two groups, experimental (n=30) and control (n=30), using non- probability convenient sampling technique. Data was collected using WHO Five wellbeing Index (1998 version) to assess the sense of wellbeing among long term hospitalized orthopaedic patients in both groups. Selected indoor games was provided to the experimental group everyday for 7 days for a duration of atleast 30 minutes while the control group resumed routine activities and did not participate in playing indoor games followed by which, sense of wellbeing was assessed again in both groups using the same tool.

Results: Study results revealed that, the calculated paired ‘t’ value was 5.581 and table value was 3.396 (df=29, p<0.001). The calculated independent ‘t’ value was 2.800 (df= 58) with a P value of 0.007 (P<0.01). Study findings also showed that, there is a significant association between sense of wellbeing and age (P=0.005), marital status (P=0.031), pain intensity (P=0.009), therapy prospects (P=0.027) and frequency of playing indoor games at home (P=0.004).

Conclusion: Selected indoor games are cost- effective and non-pharmacological measure, effective in improving sense of wellbeing of long term hospitalized orthopaedic patients.

Key Words: Effectiveness, Long term hospitalized, Orthopedic patients, Indoor games, sense of wellbeing.
Introduction

Orthopaedic injuries, refers to any injury to the body’s musculoskeletal system including injuries to the bones, joints, ligaments, tendons, muscles and nerves.¹

When fractures involve bones of the hips, spine, legs, feet or ankle, a person may be bedridden or wheelchair-bound for up to three months or more following injury and prolonged hospitalization may be required. Hospitalization is a serious change that can affect an adult’s emotional and physical needs and impacts negatively on their wellbeing.²

According to CDC, well-being includes the presence of positive emotions and moods (e.g. contentment, happiness), the absence of negative emotions (e.g. depression, anxiety), satisfaction with life, fulfillment and positive functioning. In simple terms, well-being can be described as “judging life positively and feeling good”.³

One of the key factors in improving wellbeing is face to face interaction with loved ones, as humans are social creatures with an overriding emotional need for relationships and positive connections to others.⁴ Play is a powerful catalyst for positive socialization. If an emotionally-insecure individual plays with a secure partner, it can help to replace negative beliefs and behaviors with positive assumptions and actions.⁵

Global Disease Burden 2010 report ranks road traffic accidents (RTAs) tenth for global disease burden in terms of DALY (Disability Adjusted Years of Life).⁶ India accounts for nearly 10% of the world’s RTA and 60% of it is musculoskeletal injuries.

“The analysis of road accident data 2016” (Ministry of Road Transport & Highways Transport Research Wing, Government of India) reveals that, a total number of 4,94,624 persons were injured in road accidents in India in 2016. Karnataka was third among all states in terms of number of persons injured in road accidents in the entire country with a percentage share of 11%.⁷

Orthopaedic injuries require longer hospital stays and are often associated with significant health care costs that imposes economic burden on patient, family and nation.⁸

First 3 months following an accident is a critical period for the development of psychological symptoms especially the PTSD which can be predicted to develop as early as 1 week after the accident. So, the necessary interventions are required during this period.⁹

Offering recreational activities in hospitals such as board games not only tackles boredom but also helps to deal with depression and anxiety, providing patients with the means to improve quality of life through social interaction and support, and accomplishing task-orientated goals.¹⁰ However there is a lack of research evidence to support this fact.

More research is needed to identify cost-effective and non-pharmacological measures that will simultaneously support the physical and emotional health and wellbeing of patients specifically those hospitalized for long duration.

Conceptual Framework

Figure 1: Conceptual Framework based on Deliberative Nursing Process Theory by Ida Jean Orlando.
The conceptual framework used in this study is based on the deliberative nursing process theory of Ida Jean Orlando (1961). The major components of Nursing process model are; Assessment, diagnosis, planning, implementation and evaluation.

**Methodology**

This quasi-experimental study was conducted for duration of 6 weeks from mid of March to 1st week of May 2018 in Ramaiah Medical College Hospital, Bangalore, India among 60 long term hospitalized orthopaedic patients. In the study, long term hospitalization referred to 14 days of hospitalization or more. A non equivalent control, pretest posttest design was selected therefore an experimental and control group with 30 participants in each group were selected based on eligibility criteria using non probability convenient sampling technique. The inclusion criteria were; age more than or equal to 18 years, hospitalized between 14 days upto 3 months, and should be able to read and write in English or Kannada. The exclusion criteria were; those not willing to participate in the study, critically ill, having past history of psychiatric illness or under treatment for same.

The tool used for the study consisted of 2 parts. Section A consisted of socio-demographic and clinical data and section B consisted of WHO 5 wellbeing Index (1998 version) to assess the sense of wellbeing. The tool was translated into Kannada language by two experts and the better version was chosen for the study. Tool validation was done by 9 experts followed by pretesting it among 10 participants. Reliability of the tool was obtained by using Cronbach’s alpha for internal consistency, which was r= 0.704 for English and r=0.813 for Kannada version respectively. Ethical clearance was obtained from Ramaiah Medical College Ethics Committee. Pilot study was conducted for a duration of 14 days among 14 participants (7 in each group), but 6 samples were lost due to attritions and thus only 8 participants (4 in each group) were used for statistical analysis. Although pilot study results showed selected indoor games are effective in improving sense of wellbeing (p<0.05) but duration of intervention was questionable due to large number of attritions therefore the intervention period was reduced from 14 days in pilot study to 7 days in main study.

The orthopaedic general wards and plastic surgery wards were selected for conducting the main study and randomization (lottery method) was done to assign the wards as experimental and control groups.

Data collection procedure was started after obtaining formal permission from the hospital authorities. Investigator introduced herself, explained the purpose of the study to each participant and obtained an informed consent from them for participating in the research study. Socio- demographic and clinical data was collected and pretest was conducted among the selected participants in both experimental and control groups. Selected indoor games were administered to the experimental group for a period of 7 days everyday for atleast 30 minutes with their own attender/ attenders, while the control group resumed routine activities and were not involved in playing indoor games. The indoor games comprised of board games (ludo, snake & ladder, chess and jigsaw puzzle boards), card games (Uno and memory card game) and paper games (Tic Tac Toe, solving maze and identifying differences) On the 8th day for each selected participant in both experimental and control groups, post test was taken. Seven Participants (4 in experimental and 3 in control group) who were discharged before the post-test were eliminated from the study. However data collection continued till desired sample size of 60 participants (30 in each group) was met.

**Result**

Statistical analysis for the study was done using IBM SPSS version 20.

a) **Descriptive statistics:** Frequency distribution and percentage was used to describe the socio-demographic variables. Mean and standard deviation was used to describe the pre-test and post-test well being scores of experimental and
control groups.

b) Inferential statistics: Paired t-test was used to compare pre-test and post-test scores of experimental group. Independent t-test was used to compare post test scores of experimental and control groups. Chi-square was used to find out the association between sense of wellbeing and selected socio-demographic variables.

Table 1: Frequency and Percentage distribution of sense of wellbeing scores between experimental and control group

<table>
<thead>
<tr>
<th>SN</th>
<th>Sense of wellbeing score</th>
<th>Experimental Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
<td>Pre-test</td>
</tr>
<tr>
<td>1.</td>
<td>&lt;13</td>
<td>12</td>
<td>40</td>
</tr>
<tr>
<td>2.</td>
<td>≥13</td>
<td>18</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
<td>30</td>
</tr>
</tbody>
</table>

Table 1 shows that, in pretest of experimental group, 40% of participants had poor sense of wellbeing and 60% of participants had better sense of wellbeing whereas in post test majority i.e. 93.3% participants had better sense of wellbeing and only 6.7% participants had poor sense of wellbeing. But in case of control group, 33.3% participants had poor sense of wellbeing and 66.7% participants had better sense of wellbeing in pretest whereas in posttest 30% of participants had poor sense of wellbeing and 70% had better sense of wellbeing.

Fig 2: Percentage distribution of sense of wellbeing scores between experimental and control group.

Table 2: Comparison of sense of wellbeing scores in experimental group before and after involvement in selected indoor games. n=30

<table>
<thead>
<tr>
<th>Group</th>
<th>Observation</th>
<th>Mean</th>
<th>SD</th>
<th>Paired “t” test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Calculated value</td>
<td>Table value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>Pre-test</td>
<td>13.5</td>
<td>±3.71</td>
<td>5.58* (df=29)</td>
</tr>
<tr>
<td></td>
<td>Post-test</td>
<td>16.53</td>
<td>±2.69</td>
<td></td>
</tr>
</tbody>
</table>

*significant at p≤0.001

Table 2 depicts that, calculated value for paired “t” test was 5.581 (df=29) in experimental group with table value 3.396 (p< 0.001). Hence, it shows that there is a significant improvement in sense of wellbeing in experimental group after involvement in selected indoor games.

Table 3: Comparison of sense of wellbeing scores of experimental group, following involvement in indoor games and control group following involvement in routine activities. n=60(30+30)

<table>
<thead>
<tr>
<th>Group</th>
<th>Observation</th>
<th>Mean</th>
<th>SD</th>
<th>Independent “t” test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Calculated value</td>
<td>P value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>POST TEST</td>
<td>16.53</td>
<td>±2.69</td>
<td>2.800 (df=58)</td>
</tr>
<tr>
<td>Control group</td>
<td>POST TEST</td>
<td>14.23</td>
<td>±3.61</td>
<td></td>
</tr>
</tbody>
</table>

*significant at p≤0.01

Table 3 depicts that, calculated value for Independent “t” test is 2.800 (df= 58) with p value 0.007. Hence there is a significant improvement in the sense of wellbeing among long term hospitalized orthopedic patients involved in selected indoor games than those not involved in selected indoor games.

Discussion

The findings of the study showed that 40% of participants in experimental group and 33.3% participants in control group had poor sense of wellbeing in pretest.

A study conducted by Bhandari M. et.al to assess the psychological distress and quality of life after orthopedic trauma among 215 patients, revealed that 1 in 5 patients met the criteria for psychological illness which resembled to 22% of the total
Study results revealed that, the calculated paired ‘t’ value was 5.581 and table value was 3.396 (df=29, p<0.001). The calculated independent ‘t’ value was 2.800 (df= 58) with a p value of 0.007 (P<0.01), showing that there is a significant improvement in the sense of wellbeing among long term hospitalized orthopedic patients involved in selected indoor games than those not involved in selected indoor games.

Since, this study is the first of its kind where indoor games were provided as an intervention and it involved adult population, there is a lack in research evidence to support the study. However, the findings of the current study may be helpful in filling up the huge literature gap that currently exists. The same exact study was not found but there are other studies which involved pediatric population.

A quasi experimental study was conducted by William H.C. et.al to assess the effectiveness of play interventions to reduce anxiety and negative emotions among 304 hospitalized children (experimental n= 154, control n= 150) in Hong Kong from November 2012 to October 2013. Study results revealed that, Children who received the hospital play interventions exhibited fewer negative emotions and experienced lower levels of anxiety than those children who received usual care (P<0.001).13 Larger sample size of the study can be explained by the duration taken for data collection, which was 11 months. The study used an intervention period of just 30 minutes and only for a duration of two days, reason being stated as, hospital policy of shorter stay hospitalization of only 3-4 days which can somehow be correlated to shorter intervention period of 7 days in current study.

Another quasi- experimental study to assess effectiveness of play interventions on anxiety among hospitalized children was conducted by Saharan P. and Sharma M. in India among 60 hospitalized children (30 in experimental and 30 in control group). The findings of the study revealed that in comparison to post-test mean score of anxiety in experimental and control group, the obtained t-value and p-value were 12.23 and 0.001 respectively, hence found to be significant (p<0.01).14

Study findings showed that there is a significant association between sense of wellbeing and Age (P <0.01), marital status (P <0.05), pain intensity (P <0.01), therapy prospects (P <0.05) and frequency of playing indoor games at home (P <0.01) where as for other variables like gender, educational status, religion, Monthly family income, previous history of hospitalization, diagnosis, present surgical history were found to have no association with the sense of wellbeing.

A prospective cohort study was conducted by Archer K.R. to assess the effect of psychological factors on pain and physical health after lower extremity trauma. The study revealed that there is a significant association of pain Intensity (p<0.001) with depressive symptoms.15

A study was conducted by Wang M. et.al to analyze subjective wellbeing and its influencing factors in patients with ankylosing spondylitis. Study result found that there is a significant association between subjective wellbeing and therapy prospects (p<0.05).16

A cross- sectional study was conducted by Jain R. et.al in India to assess the prevalence of depression and its associating factors in In-patient department orthopaedic patients. The study findings showed that depressive disorders are significantly associated with gender (p<0.001), socio-economic status (p<0.001), length of hospital stay (p<0.001) and type of injury (p<0.05).17

**Conclusion**

Indoor games are cost-effective and non-pharmacological measure in improving the sense of wellbeing of long term hospitalized adults. Playing indoor games with family members...
improves the social interaction and fosters family bonding. Moreover giving play materials at the bedside at selected hours of day does not disrupt routine ward activities so it can be implemented on a day to day basis for those at risk for decline in wellbeing.

**Recommendation**

- More research needs to be done on impact of hospitalization and effectiveness of indoor games among adult population because a huge literature gap exists currently.
- The same study can be replicated in different setting with larger samples or with longer intervention period.
- Similar study can be done as a true experimental study by using randomization of sample in settings where samples may be abundantly available.
- Prevalence studies can be conducted to assess subjective wellbeing among patients with chronic conditions such as cardiovascular diseases, CVA, cancer, orthopedic rehabilitation cases etc.
- Similar study can also be done by comparing different interventions to analyze which intervention works better and is more cost-effective for hospitalized patients.

**Acknowledgement**

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**Ethical Consideration**

Ethical clearance was obtained from Ramaiah Medical College Ethics Committee and formal permission was obtained from the concerned authority prior to conduction of the study. Researcher explained the purpose of the study to each participant and obtained an informed consent from them for participating in the research study. Anonymity, privacy and confidentiality of all participants were maintained during the study and no participants were harmed in the study.

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**Reference**


7. Road Accidents In India 2016 [Internet]. New Delhi: Ministry of Road Transport And Highways, Government of India; 2017 [cited 20 April 2017]. Available from:


