Physiotherapy in ICU: A Survey of Admission and Physiotherapy Utilization in a Resource-Limited Setting

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Abstract: Admission into ICU and patient profile influences utilization of physiotherapy services. Evidence supporting the role of physiotherapy in critically ill patients continues to grow; but there seems to be lack of published information on utilization of physiotherapy services among critically ill patients in a resource-limited setting. This retrospective study was aimed at describing admission profile and utilization of physiotherapy services in a general ICU. Clinical notes of 1,117 patients admitted into the general ICU of a resource-limited tertiary healthcare institution between June 2011 and June 2013 were reviewed. Information obtained from the clinical notes was cross-checked with other clinical documents such as nursing register, admission registers and physiotherapy service notes. Data were summarized in frequency and percentages. Of the 1,177 (52% male; 48% female) patient notes reviewed, 16% received any form of physiotherapy care. Though the patients who had general surgery accounted for the highest ICU admission (39%), the highest utilization of physiotherapy care was by neurosurgery patients (62%). Mobilisation exercises and chest physiotherapy were the most common form of physiotherapy services rendered. Utilization of physiotherapy in this study was low compared with developed countries, though the physiotherapy services are similar.

Key words: Admission Profile • Rehabilitation in ICU • ICU Physiotherapy Referral

INTRODUCTION

Rehabilitation is an important component of care given in the ICU to optimize lung function, reduce incidence of ventilator-associated pneumonia, facilitating weaning and promoting safe and early discharge from the intensive care unit [1, 2]. It also helps to prevent adverse physiological and physical effects of prolonged bed rest and mechanical ventilation during critical illness [3]. Physiotherapy services are usually tailored towards patient needs and depend on consciousness state, psychological status and physical strength. Delay in physiotherapy services in the ICU is associated with increased costs of service provision to the health system; as such patients often require extensive periods of rehabilitation and follow-up to meet long-term disability needs as a result of critical illness [4]. Early physiotherapy assessment and management of physical morbidity in patients admitted into the ICU has been recommended [3, 5].

Admission profile and utilization of physiotherapy services in an ICU varies from country to country and changes from time to time even in the same ICU [6,7]. The scope of physiotherapy care given in an ICU is largely influenced by type of physiotherapy equipment available and the disease pattern of patients admitted into the ICU [5, 6]. Evidence supporting physiotherapy as an integral component in the management of patients with critical illness continues to grow [8, 9] but the extent of utilization in a resource-limited ICU is not fully explored [10]. Few studies have reported ICU admission pattern in Nigeria [11, 12]. This study aimed to describe admission pattern, utilization of physiotherapy and range of physiotherapy services rendered in a Nigerian general ICU.

MATERIALS AND METHODS

Ethics: Approval for this study was sought and obtained from the Health Research Ethics Committee (HREC) of the
Institution and from the Chairman, Medical Advisory Committee of the hospital before commencement of the study.

Study Design and Setting: This study is a retrospective research design in which clinical notes of patients admitted into the general ICU were reviewed. The study was carried out at the general Intensive Care Unit (ICU), Physiotherapy Department and Health Information Management System Department of a tertiary health care facility in south-western Nigeria.

Selection and Description of Participants: This study was delimited to information documented in clinical notes such as patients’ case notes, nursing register, physiotherapy referral cards, physiotherapy notes, physiotherapy attendance registers, ICU admission and discharge summary registers between the period of June 2011 and June 2013.

Data collection and analysis: Information on 1,177 patients was reviewed using clinical notes and 191 physiotherapy treatment cards of patients who received physiotherapy service during the review period. Data on age, gender, date of admission, medical diagnosis date discharged, outcome, length of ICU stay, admission criteria, referral for physiotherapy and range of physiotherapy services delivered in the ICU were obtained from the various clinical notes. Quality of information obtained was limited to documentation in the records, but where and when necessary further clarifications were sought from the clinical staff and health information officers. Additional information was obtained and inconsistent information cross-checked at the health information management unit of the hospital. Data from this study were summarized using frequency and percentages for categorical variables. Tables, pie chart and bar chart were used to present the data.

RESULTS AND DISCUSSION

A total of 1,184 charts and records of patients admitted into the ICU during the study period were reviewed, 7 (0.6%) were excluded due to missing or incomplete information and 1177 (53% males and 47% females) were included in this study. Summary of admission profile is shown in Figure 1. Patients admitted into the ICU were from the following specialty areas: general surgery (465), neurosurgery (391), obstetrics & gynecology (122), internal medicine (109), cardiothoracic surgery (75) and orthopaedic surgery (15). A total of 368 (31.1%) patients admitted during this period received on mechanical ventilation, while 361 patients died during admission in the ICU, giving a mortality rate of 31%. Neuro-surgery cases had the highest mortality of 51.8%, while internal medicine had 47%, cardiothoracic had 27% mortality, obstetrics & gynaecology (25%), general surgery had (15%) and orthopaedics had the least mortality rate of 13% (Figure 2).

A review of 1,177 patients’ record showed that 191 (16.2%) of total patients admitted during the period under review received physiotherapy care. Figure 3. shows the age distribution of patients who received physiotherapy services, by gender. Most of the patients referred for physiotherapy were aged from 45 to 65 years. The highest number of referral 118 (61.78%) was received from neurosurgery while the least 4 (2.09%) were received from orthopaedics and obstetrics and gynaecology (Figure 4). Scope of physiotherapy services offered in ICU during the study period were chest physiotherapy, breathing exercises, incentive spirometry, coughing technique, progressive mobilisation, strengthening exercises, positioning, massage (Table 1).
Demographic Characteristics of Patients Admitted in ICU: This two-year retrospective study was undertaken to describe admission pattern, utilization of physiotherapy and range of physiotherapy services rendered in a general ICU in a resource-limited setting. A total of 1,177 patients record out of 1184 admissions made in ICU during the study period were reviewed. More males were admitted during this period than the females. This observation is consistent with the findings of studies from different countries indicating more males were admitted into the ICU [1, 13]. Majority of the patients were in their productive years between the ages 26 and 45 years. This observation is similar to that reported by Garg et al. [14].

During the period under review, we observed that 368 (31%) of the patients admitted were on mechanical ventilation. The utilization of mechanical ventilation in this study is similar to that reported by Dasta et al. [15]. They conducted a retrospective study of patients admitted into 253 ICUs in the United States and found that about a third of the total patient population were on mechanical ventilation. Our finding suggests that use of mechanical ventilator in the setting of the current study, is not different from those of advanced countries. This has implication for resource planning in the ICU.
Admission Pattern of Patients in ICU: Admission into the ICU was clinical specialty driven, comprising cardiothoracic surgery, medicine, obstetrics and gynecology, neurosurgery, general surgery and orthopaedics. In this study, we noted that referral from general surgery accounted for the highest number of patients (40%) admitted into the ICU, followed by neuro surgery (32.2%), while orthopaedics had the least number of patients. This admission profile differs from that reported by Garg et al. [14] who conducted a similar study in India. They reported the highest admission in the ICU from cardiothoracic surgery (376; 16%). High Cardiovascular disease burden in that population and availability of cardiothoracic surgery centers account for this difference.

Most of the ICU admissions (57.1%) in this study were for post-operative management. A similar study carried out in north-central Nigeria [12] summarised admission pattern according to indication such as postoperative surgical cases, medical cases, poly trauma, obstetrics and gynaecology cases and burns. The postoperative surgical cases constituted the highest admission rate (48%) and also had the highest mortality rate (38.6%). The postoperative surgical cases they reported include cardiothoracic surgeries, neurosurgery, complication from thyriodectomy and laparotomy. From the records reviewed, only 15% of the surgical patients received any form of preoperative physiotherapy service. Pre-operative physiotherapy has been shown to reduce complications and improve post-operative outcomes [16]. This observation may highlight the need for increased uptake of pre-operative physiotherapy, as this may have positive effect on post-operative outcomes. The mortality rate observed in this study (30.67%) is similar to that observed in Zagazig University Hospitals, Egypt where the overall mortality rate was 30.5% [17]. In this study, though neurosurgery unit had the second highest ICU admission, it had the highest mortality rate (48%). This high mortality among neurosurgical patients in the ICU may indicate the need for further specialized training and equipping of the ICU for neurosurgical cases, as well as additional staffing to curb this trend.

Proportion of Patient Who Received Physiotherapy: Physiotherapy utilization reported in this study is very low. This may be due to several factors such as lack of fund by patients, inadequate rehabilitation professionals trained to provide specialized care the ICU among others [16]. Although the physiotherapy unit is adequately staffed, very few have specialized training in managing critically ill patients or work in the ICU. In addition, there is a need to further educate care givers on need for physiotherapy services in the ICU and to develop a protocol or guideline that will address these needs [8].

The highest proportion of patients who received physiotherapy while on admission in the ICU were neurosurgery patients (62%); while orthopedics and Obstetrics and Gynecology patients had the least proportion (2%). This observation is supported by the findings of Hodgini et al. [18] who reported that the highest need of physiotherapy service in the ICU was observed for patients with neurological conditions (87%) and the lowest was for chronic obstructive pulmonary disease (64%). This finding further stresses the need for dedicated equipment and adequate staff with specialized training to cater for the special needs of neurosurgical patients in the ICU [19].

Scope of Physiotherapy Services: The scope of physiotherapy services rendered to the patients in ICU during the study period were mainly mobilization techniques comprising of assisted active exercises, free active exercises and resisted active exercises; chest physiotherapy; breathing exercises; incentive spirometry; coughing technique; progressive and graded ambulation (Sitting in bed, sitting by edge of the bed, sitting out of bed, standing and walking re-education); positioning, massage and proprioceptive neuromuscular facilitator technique. Most patients reviewed during the study period received some form of mobilization and massage. In addition, majority of the cardiothoracic patients had chest physiotherapy and incentive spirometry, while most neurosurgical patients received chest physiotherapy, positioning and proprioceptive neuromuscular facilitator technique. Physiotherapy interventions were more related to the presenting problem of the patients rather than disease condition. This is similar to the study carried out by Kumar et al. [16] in an Indian tertiary Hospital where 90% of ICUs physiotherapists performed mostly chest physiotherapy, mobilization, incentive spirometry and postural drainage. In this study, mobilization was the most common form of physiotherapy services rendered. A similar observation was reported Chaboyer et al. [20] where all patients (100%) referred for physiotherapy received mobilization. Chest physiotherapy (percussion, vibration, suctioning) was also performed on majority of the patients (65%) on comparison with counterparts in Australian (79%) [20] and European (98%) [6].
CONCLUSION

The outcome of this study provided information on admission pattern in the ICU, utilization of physiotherapy services in the ICU and scope of physiotherapy services provided in a general ICU of a resource-limited health care facility. This information may be potentially useful in identifying areas that need strengthening and attention for more resource planning in the ICU.

Admission pattern into the general ICU during the period under review differed from that reported in other ICUs [11, 12, 14]. Proportion of patients who received physiotherapy in the ICU is relatively low compared with other countries though the physiotherapy services are similar. Further studies to identify probable factors that could influence more uptake of physiotherapy services in the ICU may be needed.

REFERENCES