Original Article

Experiences of Nursing and Midwifery Faculty Staff about Muda: A Qualitative Study

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Abstract
Background: Employees play a critical role in managing *Muda* (waste) in organizations. In nursing schools, fostering a culture of continuous improvement and empowering staff to engage in waste reduction efforts can significantly enhance organizational efficiency. Accordingly, this study aimed to explore the perceptions of nursing and midwifery faculty staff regarding Muda.
Methods: This qualitative study employed a content analysis approach. Eight employees from the Faculty of Nursing and Midwifery in Birjand were selected using purposive sampling. Data were collected through semi-structured in-depth interviews conducted from October to December 2022. All interviews were recorded, transcribed, and analyzed using Granheim and Lundman's content analysis method.
Results: Continuous and comparative analysis of the data revealed two main categories and ten subcategories. The main categories included organizational learning deficits and creating an environment for active learning and experience.
Conclusion: The presence of Muda in educational organizations can lead to adverse professional consequences. Therefore, it is necessary for nursing faculty administrators to reduce waste, ultimately improving the quality of education for students.
Keywords: Futility, Experience, Nursing faculty, Qualitative research

Introduction

Derived from the Japanese language, *Muda* refers to any activity or process that fails to add value to an organization's product or service, thereby causing waste (1). In the context of lean management, Muda represents one of the three types of waste that organizations strive to eliminate, along with Muri (overload) and Mura (unevenness) (2). Lean management is a systematic approach rooted in continuous improvement and focusing on the continuous identification and elimination of waste with the ultimate goal of providing optimal value to customers (3).

In the realm of nursing education, the recognition and effective management of Muda are of critical importance, as the presence of Muda can lead to inefficiencies, increased costs, and a compromised quality of education for students (4). Nursing schools face multiple challenges in providing comprehensive, high-quality education while overcoming the constraints of limited resources (5). Waste in higher education can manifest in forms, such as redundant administrative tasks, excessive documentation processes, inefficient scheduling, and ineffective communication channels (6). These wasteful activities not only consume precious time and resources but also detract from the

educational experience, hindering students' development into skilled and competent nurses. By identifying and eliminating waste, nursing schools can optimize resource utilization and enhance the overall educational experience for both students and staff (7). Successful Muda management in nursing education requires a deep understanding of the specific processes and activities involved in providing quality education. This requires collaborative efforts among faculty, administrators, staff, and students to identify inefficiencies and implement targeted improvements (8).

It is important to recognize the essential role of staff in Muda management, as they are directly involved in the day-to-day operations of nursing schools and have valuable insights into potential areas of waste (9). Their perspectives and experiences shed light on inefficiencies, bottlenecks, and other forms of waste that may not be immediately apparent (10). By actively engaging staff in the waste management process, nursing schools can foster a culture of continuous improvement and empower staff members to contribute to organizational efficiency. Faculty members, administrators, and support staff each bring unique expertise and experience into the process of waste

management (11). Faculty members, through their close interactions with students, can identify areas where Muda negatively affects the educational process, such as extra courses, inefficient teaching methods, or unnecessary assessments. Administrators can provide insights into administrative processes and highlight opportunities to streamline tasks or minimize paperwork (12). Support staff, who are involved in various operational aspects of nursing schools, can identify areas where resource allocation can be optimized, such as equipment utilization or maintenance procedures (9).

A qualitative study of employees' perspectives on Muda can yield valuable insights. By creating an environment of trust and encouraging active participation, nursing schools can tap into the collective knowledge and experience of their staff and unlock innovative solutions to eliminate waste and improve efficiency (13). This study seeks to explore staff experiences and identify areas of waste, offering valuable insights and recommendations for improving Muda management in nursing education (14). The findings contribute to the existing body of knowledge on reducing waste in educational settings, providing practical strategies to enhance efficiency, reduce costs, and improve the quality of nursing education. Moreover, this study serves as a foundation for future research and informs decision-making processes in nursing schools, enabling them to proactively identify and eliminate sources of waste (15). The present study examines the experiences of Muda in a nursing school in Birjand, focusing on the perspective of staff. Using a multifaceted approach, this study aims to gain a comprehensive understanding of different types of Muda encountered in the educational environment of nursing schools.

Methods

This qualitative content analysis was conducted in 2022 to explore the perceptions of nursing and midwifery faculty employees on different types of Muda. The objective of the study was to collect and analyze comprehensive data from participants, and qualitative content analysis was deemed appropriate for achieving this objective. Data were systematically classified using content analysis, and codes and categories were identified (16).

The study was conducted at the Faculty of Nursing and Midwifery in Birjand, and purposive sampling was employed until data saturation was achieved. Purposive sampling involves selecting individuals with extensive experience in the subject under investigation who are willing and able to express their perspectives (16). Eligible participants included both faculty or non-faculty employees with more than two years of work experience.

Data collection and analysis were guided by the research objectives and based on participants' statements. The interviews were recorded with participants' consent and transcribed after multiple reviews. Individual interviews were conducted at participants' workplaces, with an emphasis on achieving maximum diversity in terms of background and work experience. Participants were encouraged to share their experiences regarding the identification of different types of Muda and were asked to describe a typical workday, providing concrete examples. Recruitment continued until data saturation was achieved, which occurred after interviewing eight participants.

The main interview questions were: "How would you define Muda or waste?", "Can you provide examples of Muda?", "What factors contribute to the formation of Muda?", "What is the importance of eliminating Muda?", and "What solutions do you suggest for eliminating Muda?"

Follow-up questions were asked based on participants' responses to gain deeper insights and clarify concepts. Examples of follow-up questions included: "Can you please elaborate on this issue?", "What do you mean?", or "My understanding of your words is this, have I interpreted it correctly?". The duration of the interviews ranged from 40 to 90 minutes, depending on participants' conditions and willingness. Data were collected from October to December 2022.

Granheim and Lundman's qualitative content analysis was used for data analysis (17). Each interview transcript was reviewed multiple times, and semantic units were identified based on the research objectives. Open coding was performed based on both explicit and implicit content of these semantic units. Codes were merged and classified based on their similarities and differences, and then subcategories were formed. This abstraction process continued until the categories were extracted. Data were analyzed using MAXQDA-20 software.

To ensure the scientific rigor of the study, the criteria for qualitative research outlined by Guba and Lincoln (18), including credibility, transferability, dependability, and confirmability were followed. Credibility was enhanced through member checking, where participants reviewed parts of the interview text, codes, and emerging categories to verify the accuracy of the analysis. Data saturation further strengthened credibility. Confirmability was ensured by having two faculty members examine the appropriateness of the results, in addition to the main researchers. Furthermore, dependability was achieved by creating backups, seeking peer feedback, and re-reading the entire dataset. Transferability was enhanced by conducting interviews with a diverse range of participants, providing direct quotes, rich examples, and explanations. The use of maximum diversity sampling also contributed to the transferability and applicability of the findings to a wider audience.

This study adhered to ethical principles throughout the research process. Before the interviews commenced, participants were provided with explanations by the

researcher, including the voluntary nature of participation, the right to withdraw at any time, and the confidentiality of their information. Written consent was obtained from all participants. They were also informed that they could be contacted again to clarify or complete discussions if necessary.

Results

Participants

Eight employees, aged 29 to 60 years (mean age: 45.25 years), participated in this study. The mean work experience of participants was 20.5 years. Besides, six participants were faculty members, and two were non-faculty staff (Table 1).

Analysis of the participants' interviews led to the extraction of two categories and ten subcategories, which are described below (Table 2).

Category 1: Organizational learning deficits

Participants identified learning deficits in the organization as a significant factor contributing to Muda. This category encompassed several dimensions, including lack of employee competence, poor management, organizational inertia, insufficient resources, mismatch between expertise and responsibilities, and overlapping courses in students' curricula.

Lack of employee competence

Employees with low competence may fail to complete tasks efficiently or correctly, leading to wasted time and financial resources, as well as diminished service quality.

"We have two types of employees in the system. Some are very intelligent and highly skilled in formal processes and regulations, while others excel in informal processes and communication. Both types can disrupt workflows and prolong processes, wasting resources, but the latter causes this more" (Participant 5).

Poor management

Weakness in management was identified as a major contributor to waste in administrative organizations. A lack of familiarity with planning, organizing, and human resource management techniques among managers can result in decreased productivity.

"I teach a two-hour class, but there is no monitoring of what I teach during those two hours" (Participant 4).

"The supplier purchases lower-quality materials, and there is no monitoring to determine whether the equipment he buys performs well or not" (Participant 8).

Organizational inertia

Organizational inertia refers to resistance to change and innovation, preventing an organization from evolving beyond its initial stages.

"There is insufficient motivation for development. We just spend days, and it seems that the motivation is not enough to stop waste and redirect energy toward more productive uses" (Participant 5).

Insufficient resources

A lack of resources can lead to wasted time in educational organizations.

"Our computers are relatively adequate for our daily tasks, but when we want to install new software, we encounter significant problems. There have been many instances where our time was wasted on these systems. It has frequently occurred that I spent entire mornings troubleshooting these systems" (Participant 6).

"The shortage of human resources increases the number of teaching courses assigned to each faculty member. This forces us to manage our time based on the number of courses, often causing materials not to be covered in depth. It is a fact that this is a waste of resources" (Participant 2).

Mismatch between expertise and responsibilities

When employees' knowledge and skills are not effectively utilized, the organization's capabilities are wasted.

"It is a form of waste when you continue your education in a specialized field and gain expertise, but find no opportunities to apply that expertise in your role" (Participant 5).

Table 1. Demographic characteristics of participants

Participant	Gender	Age	Work History	Degree of education
Participant 1	Female	38	15	MSc
Participant 2	Male	60	32	MSc
Participant 3	Female	51	28	MSc
Participant 4	Female	48	25	MSc
Participant 5	Female	34	5	PhD
Participant 6	Female	52	28	MSc
Participant 7	Male	29	4	MSc
Participant 8	Male	50	27	PhD

Table 2. Categories and subcategories

Categories	Subcategories
Organizational learning deficits	Lack of employee competence
	Poor management
	Organizational inertia
	Insufficient resources
	Mismatch between expertise and responsibilities
	Overlapping courses in students' curricula
Creating an environment for active learning and experience	Improving organizational culture
	Process Engineering
	Managerial competence
	Promoting professional commitment

Overlapping courses in students' curricula

Overlapping course content can lead to redundancy and wasted effort for students.

"Some courses overlap significantly, with up to 20% of the content being repeated across different subjects. This is a waste of students' time and resources" (Participant 3).

Category 2: Creating an environment for active learning and experience

This category highlighted potential solutions for eliminating Muda in educational organizations, which were further classified into four subcategories, including improving organizational culture, process engineering, managerial competence, and promoting professional commitment.

Improving organizational culture

Fostering a collaborative culture and encouraging cooperation among employees can help reduce waste.

"New employees should undergo an orientation phase where they are introduced to the workplace. We have to spend a few days to show them the whole environment and introduce whatever necessary, such as forms, regulations, etc." (Participant 5).

"Employees should first check the system every day in the morning for pending tasks. Generally, it takes 20 minutes. The first thing I do is to check my system, because after all, it ensures timely response to urgent matters" (Participant 1).

Process engineering

Optimizing systems and processes can reduce waste in educational organizations.

"There should be a revision of course content. While the volume of materials has increased significantly, some topics may no longer be relevant, and new developments should be incorporated to keep students updated" (Participant 4).

Managerial competence

Effective management requires a range of skills, and the absence of these skills can hinder organizational success.

"If managers have a clear strategic vision and a well-defined plan for the organization's direction, they can prevent waste. Managers are final decision-makers and leaders, and their actions set the tone for the entire organization" (Participant 7).

Promoting professional commitment

Improving productivity in education requires a commitment to quality, teamwork, and professional development among educational staff.

"Work ethic and responsibility are critical. Many of the challenges we face in the current systems stem from a lack of work ethic and responsibility. If tasks were performed following ethical principles, much of the wasted time could be avoided" (Participant 6).

Discussion

This study explored the experiences of staff at the Faculty of Nursing and Midwifery in Birjand regarding Muda (waste). The findings indicated that learning deficits within the organization could be attributed to several factors, including the lack of employee competence, poor management, organizational inertia, insufficient resources, mismatch between expertise and responsibilities, and overlapping courses in students' curricula.

Lack of employee competence, characterized by insufficient skills and expertise, hinders the effective performance of duties. Poor management further exacerbates these issues as managers' inability to plan, organize, and allocate resources effectively undermines productivity. Strategic inertia, or the failure to adapt to changes and new needs, also contributes to learning deficits. Furthermore, shortages of financial, technical, or human resources create barriers to effective learning. The mismatch between employees' knowledge and skills and their assigned responsibilities, as well as overlapping course content in students' curricula, further diminish the quality of education.

No similar studies have been found to focus on the experience of Muda in nursing schools. Nevertheless, the findings of this study are consistent with the Lean Six Sigma methodology, which identifies defects, overproduction, waiting times, underutilization of talent, and inefficiencies in transportation, storage, and handling of raw materials as key sources of waste (19). The learning deficits identified in the present study, along with their subcategories, are consistent with the waste categories examined in Lean Six Sigma.

To address these issues, potential solutions include promoting an organizational culture that values learning, optimizing process engineering, enhancing managerial competence, and fostering professional commitment. These measures can help create an environment conducive to learning and experience-sharing in an organization.

The low staff competence and weak management identified in this study can result in poor decision-making, inefficient allocation of resources, and, ultimately, a decline in the quality of education (20). This underscores the importance of investing in professional development and training programs for both faculty and administrative staff to enhance their skills and knowledge, which can lead to better decision-making and effective utilization of resources (21).

To eliminate learning deficits within an organization, creating an environment that promotes the values of learning, cooperation, and knowledge-sharing can help foster a learning and experience-conducive atmosphere

(22). Improving the processes related to learning and knowledge transfer in the faculty or organization and encouraging and supporting managers in the processes of learning and employee development are also possible through promoting process engineering and managerial competence. Encouraging employees to pursue professional development, continuous training, and updating their knowledge and skills can also help promote professional commitment and create an environment that fosters learning and experiences (23).

Strategic inertia, or the inability to adapt to changing conditions, can prevent organizations from responding effectively to new challenges and opportunities (24). This can result in missed opportunities for growth and improvement. To address this, nursing schools should adopt agile and flexible strategic planning processes that allow for regular reevaluation and adjustment of goals and priorities. Such an approach can help organizations adapt to changing conditions and seize new opportunities for growth and improvement (25).

Creating an environment for learning and experience, as the second category, was further divided into four subcategories, including improving organizational culture, process engineering, managerial competence, and promoting professional commitment. These factors are critical for establishing a supportive and effective learning environment (26). Improving organizational culture can foster shared values and a sense of purpose among employees and students, leading to increased motivation and engagement. To achieve this goal, nursing schools must invest in initiatives that promote communication, collaboration, and a sense of community within the organization, including team-building exercises, mentorship programs, and open communication channels that encourage feedback and suggestions from all members (27).

Process engineering involves optimizing teaching and learning processes to enhance efficiency and effectiveness. This may include adopting innovative teaching methods, using technology to support learning, and streamlining administrative processes. By reducing administrative processes, faculties can focus more on teaching and learning activities, and students can enjoy a more seamless educational experience. Incorporating technology and innovative teaching methods can also help to enhance the quality of education and foster a more interactive learning environment.

Managerial competence and professional commitment are closely related to the issues raised in the first category (28). By addressing organizational learning deficits, nursing schools can create a more supportive environment for learning and professional growth, leading to better outcomes for both students and faculty.

One of the limitations of this qualitative study is its reliance on participants' interpretations and subjective experiences, which may limit the generalizability of the findings to other nursing schools or educational institutions. While qualitative research provides deep insights into specific contexts, differences in organizational culture, resources, and other factors may affect the applicability of findings. Therefore, further research is needed to validate the findings of this study and examine the issues discussed in a broader context. To strengthen the generalizability of the findings, future research could combine quantitative and qualitative methods or conduct similar studies across a broader range of educational institutions. This can help confirm the results of this study and provide a more comprehensive perception of the factors that contribute to learning deficits in educational organizations. Besides, future studies could explore potential solutions to the issues identified in this study and evaluate their effectiveness in improving the quality of education and reducing waste.

Conclusion

This qualitative study identified two main categories related to Muda in lean management at the Faculty of Nursing and Midwifery in Birjand: 1) organizational learning deficits, and 2) creating an environment for active learning and experience. These findings provide valuable insights into the challenges faced by nursing schools and highlight potential areas for improvement. By addressing these issues through initiatives, such as improving organizational culture, process engineering, managerial competence, and professional commitment, nursing schools can create a more supportive environment for learning and professional growth.

Nursing schools can enhance their operational efficiency, reduce waste, and improve the quality of education. The present study serves as a starting point for understanding the complexities of lean management in educational institutions and provides a foundation for further research and improvement. Based on these findings, nursing schools can continue to enhance their operations and provide a better learning environment for their students.

By focusing on the identified areas of interest, nursing schools and other educational organizations can strive to create more efficient, effective, and supportive learning environments for their students. The findings of this study can lead to improved outcomes for both students and faculty and help the organization achieve its goals more effectively.

Authors' Contribution

Conceptualization: Hossein Sadeghnezhad, Marzieh Helal Birjandi.

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Formal analysis: Hossein Sadeghnezhad, Marzieh Helal Birjandi.

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Competing Interests

There is no conflict of interest in this study.

Ethical Approval

This study was approved by the ethics committee of Birjand University of Medical Sciences (ethics code IR. BUMS. REC.1401.209).

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