CASE STUDY

The Journal of Palembang Nursing Studies
https://jpns-journal.com/index.php/jpns
OPEN ACCESS

Family-centered care for a patient with multiple organ dysfunction syndrome in the intensive care unit: A case report

Nurul Darmawulan[1*]
Etika Emaliyawati[2]
Chiao Ling Lin[3]

[1] Ners Program, Faculty of Nursing, Universitas Padjadjaran, Bandung, Indonesia
[2] Department of Emergency and Critical Nursing, Faculty of Nursing, Universitas Padjadjaran, Bandung, Indonesia
[3] PhD Program, School of Nursing, College of Nursing, Taipei Medical University, Taipei, Taiwan

***Correspondence**:
Nurul Darmawulan
Faculty of Nursing, Universitas Padjadjaran, Raya Bandung Sumedang Street KM. 21, Hegarmanah, Sumedang, West Java, Indonesia. Phone: +6285559254157.
Email: nurul18012@mail.unpad.ac.id

Volume 2(3), 179-185

http://dx.doi.org/10.55048/jpns91

e-ISSN 2827-8100
p-ISSN 2827-8496

Received : July 3, 2023
Revised : July 16, 2023
Accepted : July 20, 2023
in Press : July 22, 2023
Published: September 6, 2023

ABSTRACT

Background: Patients with multiple organ dysfunction syndrome (MODS) require complex intensive care, and family involvement plays an essential role in achieving patient recovery. Family-centered care in the intensive care unit (ICU) benefits patients, families, and healthcare workers.
Objective: This case study aimed to evaluate the family-centered care approach for patients with MODS in the ICU.
Case: A 46-year-old male patient with MODS presented various problems, including the risk of respiratory infections, impaired renal perfusion, and pressure sores. An interview with the patient's family revealed that they felt guilty, worried, and lacked sufficient information about the patient's condition. The interventions provided to the family included giving them information about the patient's condition, care plans, and evaluation results after procedures, providing spiritual guidance, offering family support, and involving them in the patient's required procedures.
Conclusion: After the patient had been admitted for two days, there was an improvement in the patient's outcomes. Simultaneously, the patient's family experienced a sense of calmness and increased satisfaction with the provided health services. To facilitate the implementation of family-centered care in the ICU, it is crucial to further develop hospital policies. Moreover, achieving successful family-centered care necessitates the support and cooperation of the medical staff.

Keywords: family-centered care; multiple organ dysfunction syndrome; intensive care unit; case report

INTRODUCTION

Multiple Organ Dysfunction Syndrome (MODS) is a phenomenon where two or more organs or all body systems fail to function after severe trauma or infection (Hu et al., 2018). MODS is a serious and potentially fatal condition (Asim et al., 2020). The mortality rate for patients with MODS ranges from 40% to 72% (Poovazhagi, 2014). The high mortality rate makes this condition dangerous and necessitates complex and intensive treatment. To effectively manage MODS, it is essential to have the cooperation of the patient's family. This is because the

Nursing and Healthcare Practices

- *Nursing and healthcare practice should include providing comprehensive information to patients and their families about the patient's condition, care plans, and evaluation results after procedures.*
- *Implementing family-centered care in the ICU can lead to improved patient outcomes and increased satisfaction with healthcare services for both the patient and their family.*
- *To ensure successful family-centered care, collaboration and cooperation between medical staff and families are essential, emphasizing the need for supportive hospital policies.*

family can provide valuable emotional support and aid in the patient's recovery. Without their involvement, the patient's physiological decline and death may be more likely. It is crucial to work together as a team to ensure the best possible outcome for the patient (Babaei & Abolhasani, 2020). Family-centered care is an approach that involves respecting the rights of the patient and family, sharing information about the patient's condition and treatment, involving the family in decision-making, and collaborating with them during treatment (Davidson et al., 2017).

Family-centered care is crucial for managing patients with MODS and ensuring exceptional healthcare. MODS is a critical condition requiring extensive clinical management and significant healthcare resources (Asim et al., 2020). Family-centered care in the intensive care unit is an approach that has been shown to benefit not only the patient but also the family and healthcare workers. By involving the family in the patient's care, it can help improve outcomes and reduce stress for both the patient and their loved ones. It also allows healthcare workers to better understand the patient's needs and preferences, leading to more effective and personalized care (Schwartz et al., 2022). Hamzah, et al. (2017) state that involving family members in the Intensive Care Unit (ICU) improves respect, collaboration, and support. Other studies also state that family presence in the ICU is associated with increased communication and involvement in decision-making (Naef et al., 2021). Thus, nurses play an essential role in involving the patient's family in the ICU. This case study aims to evaluate the family-centered care approach to patients with multiple organ dysfunction syndrome in the intensive care unit.

CASE PRESENTATION

A 46-year-old male patient with a body weight of 70 kg experienced multiple organ dysfunction syndrome (MODS) due to diabetic ketoacidosis. The patient's past medical history includes a ten-year history of hypertension, and diabetes and high cholesterol were diagnosed two months ago. However, the patient did not adhere to medication or regular health check-ups. There is a family history of hypertension. Before falling ill, the patient was actively smoking, consuming caffeine, and eating processed fried foods. The patient was initially treated at the Emergency Room of government hospital in West Java for two days before being transferred to the ICU on the third day of treatment.

At the time of the study, the patient's level of consciousness under the influence of sedation, as measured using the Ramsay score, was 5 points. The Sequential Organ Failure Assessment (SOFA) score was 11 points, indicating a mortality rate of 45.8%. The Acute Physiology and Chronic Health Evaluation II (APACHE II) score was 25 points, indicating a mortality rate of 55%. Both the SOFA and APACHE II scores suggest that the patient is experiencing dysfunction in multiple organs.

In the respiratory system, the patient was classified as having Acute Respiratory Distress Syndrome (ARDS) at a severe level, with a mortality rate of 45% (pO2 69 mmHg/FiO2 90%), respiration rate of 22 breaths per minute, and SpO2 of 91% with the PC-SIMV ventilator mode. Blood gas analysis revealed primary respiratory acidosis with secondary metabolic acidosis (pH 7.2; pCO2 49.6 mmHg; pO2 69 mmHg; HCO3 19.6 mmHg; BE -7.7). The patient was at risk of developing ventilator-acquired pneumonia (VAP), as evidenced by thick white sputum, intercostal retractions, increased leukocyte count (16,620 /uL), temperature of 37 degrees Celsius, and a Beck Oral Assessment Scale (BOAS) score of 11 points (requiring assessment every shift, brushing of teeth every shift, and lip balm application every 2 hours).

Table 1. Clinical Laboratory Results

Parameter	Reference	On Admission	Day 1	Day 2
Haemoglobin (g/dL)	14-17.4	11.4	11.8	9.7
Haematocrit (%)	41.5-50.4	39.7	40.8	32.5
Leukocytes (/uL)	4.400-11.300	16,620	11,590	10,360
Thrombocyte (/uL)	150,000-450,000	174,000	162,000	145,000
Urea (mg/dL)	19-44	85.6	55.7	137.2
Creatinine (mg/dL)	0.72-1.25	6.00	3.88	7.32
Na (mEq/L)	135-145	140	141	141
K (mEq/L)	3.5-5.1	6.7	4.5	5.7
Cl (mEq/L)	98-109	108	109	107
pH	7.35-7.45	7.2	7.36	7.2
pCO2 (mmHg)	35-45	49.6	29.6	46.6
pO2 (mmHg)	80-100	69	154.4	157.1
HCO3 (mmol/L)	22-26	19.6	17.6	19.3
BE (mmol/L)	-2 up to +2	-7.7	-7.3	-7.6
SaO2 (%)	96-100	89,3	99.3	99.4

Na (natrium), K (kalium), Cl (chloride), pH (potential of hydrogen), pCO2 (partial pressure of carbon dioxide), pO2 (partial pressure of oxygen), HCO3 (bicarbonate), BE (base excess), SaO2 (oxygen saturation).

Based on the respiratory system assessment, the patient was at risk of respiratory infection.

In the urinary system, the patient had a bright yellow urine output of 70 cc/hour, a fluid balance of -293/24 hours, grade II edema in both legs, increased blood pressure (146/84 mmHg, MAP 90 mmHg), pulse rate of 108 beats per minute, increased potassium (6.7 mEq/L), urea (85.6 mg/dL), and creatinine levels (6.00 mg/dL). The urinary system assessment indicated that the patient had impaired renal perfusion problems (Table 1).

In the integumentary system, the patient was at risk of developing pressure sores. This was evidenced by dry and scaly skin on the heels and a 1 cm x 1 cm laceration on the back with a red wound base. The depth of the wound was less than 1 cm on the first day of admission. The patient had a total dependence level, and the Braden scale score was 13, indicating moderate risk.

During the family interview, it was found that the patient's family members felt guilty, worried, and frequently asked about the patient's condition while expressing their emotions through crying. They mentioned that they were not provided with sufficient information about the patient's condition. According to their explanation, the family felt involved only when health workers needed necessary documents, without receiving explanations about the patient's condition after procedures such as intubation, central venous catheter installation, and double lumen catheter installation. The patient's family expressed their hope to receive daily information about the patient's condition and to be actively involved in the ICU team.

The care plan was created based on the patient's problems. According to the Institute for Healthcare Improvement (IHI) and Permenkes RI number 27 of 2017, the patient requires oral care every shift with a soft toothbrush and lip balm application every 2 hours. This is aimed at preventing the occurrence of Ventilator-Associated Pneumonia (VAP), which can worsen the patient's MODS condition. The role of the patient's family is to participate in and carry out the procedure, if possible, accompanied by a nurse. Additionally, the patient's impaired renal perfusion indicates a need for a haemodialysis procedure, so the doctor must obtain informed consent from the patient's family. Furthermore, studies have shown that repositioning and administering olive oil are effective in preventing pressure sores (Ippolito et al., 2022). The family will be taught how to apply olive oil and perform massages with the assistance of a nurse. The care plan will be carried out during the designated visit time, as there is a policy limiting visit times. During the visit, the family will also be provided with information about the patient's condition, care

plans, and patient trajectory. Additionally, they will receive spiritual guidance to reduce family anxiety (Klimasiński, 2021) and be provided with family support (Schwartz et al., 2022).

After two days of admission, an evaluation was conducted for both the patient and the family. The results of the patient evaluation showed an improvement in the outcomes, as measured by a SOFA score of 9 points, indicating a mortality rate of 26.3%. The APACHE II score was 19 points, indicating a 25% mortality rate. The evaluation of the respiratory system revealed no intercostal retractions, and the ARDS classification was at a moderate level with a mortality rate of 32% (pO2 157.1 mmHg/FiO2 90%), respiration rate of 16 breaths per minute, and SpO2 of 98% with ventilator mode on PC AC. The leukocyte count was within the normal range (10,360 / uL), temperature was 37 degrees Celsius, and the sputum was thin and white. The BOAS score obtained 6 points (requiring review twice a day, tooth brushing twice a day, and lip moisturization every 4 hours). These results indicate that oral care interventions effectively reduced the risk of VAP in patients with MODS.

The evaluation of the urinary system showed decreased urine output with bright yellow 18-23 cc/hour, fluid balance of +800 cc/24 hours, grade II edema in both legs, increased blood pressure (153/82 mmHg, MAP 100 mmHg), pulse rate of 103 beats per minute, increased potassium (5.7 mEq/L), increased urea (137.2 mg/dL), and increased creatinine (7.32 mg/dL) (Table 1). It is important to note that the haemodialysis intervention does have an effect; however, in this case, the patient underwent haemodialysis for the first time. According to De Nicola et al. (2012), patients who have recently undergone haemodialysis may experience increased creatinine levels because the effective removal of metabolic wastes from the body is not yet fully functional, leading to the accumulation of metabolic waste substances in the blood.

The evaluation of the integumentary system showed that the skin on the heel is no longer scaly, the laceration on the back has improved, the patient is in a state of total dependence, and the Braden scale score is 15 points, indicating a low risk of pressure sores. The evaluation of the patient's family revealed a decrease in anxiety, which was evident from both non-verbal and verbal responses. The patient's family mentioned that their anxiety was reduced, and they appeared less tense and more open when communicating with the nurse about the patient's needs.

DISCUSSION

Family-centered care is based on core concepts, namely dignity and respect for the rights of patients and families, sharing information about patient conditions, including family participation in making decisions, and collaborating with families regarding care planning (Davidson et al., 2017). The implementation of family-centered care in the ICU is the strongest predictor of increasing respect, collaboration, support, and involvement in decision-making (Naef et al., 2021).

Patient Visit Policy

In this case, the hospital's policy for visitation time in the ICU allows 30 minutes for one patient's family member per day. However, the timing of patient visits should be carefully considered, as it must be flexible and aligned with the family's rhythm, rather than solely following institutional guidelines (Davidson et al., 2017). Research has shown that flexible family visits can reduce delirium or cardiovascular complications (Beesley & Brown, 2020). Limiting patient-family visits is not unique to this case, as the literature also highlights similar occurrences in ICU settings (Jacob et al., 2016; Liu et al., 2013). Due to the limited time, the family's involvement is restricted to providing information and participating in some procedures.

Family Participation During Rounds

In this case, nurses and doctors invited the family to discuss future treatment plans and make decisions regarding haemodialysis procedures. The doctor initially explained the procedure to the patient's family and sought their approval. Subsequently, the nurse supported the family in the decision-making process. Once the family agreed, the doctors prepared the patient for haemodialysis. After completing the procedure, the doctor and nurse evaluated its success and conveyed the results to the family.

Good therapeutic communication skills are essential when conveying patient information to the patient's family in the ICU. Nurses play a vital role as intermediaries between patients, families, and healthcare workers (Ghiyasvandian et al., 2014). However, in this case, providing information to the family was not consistently carried out during visits

or outside visit times due to high workload, resulting in a lack of understanding about the patient's condition. Miscommunication can lead to family misunderstanding of the patient's condition. Emaliyawati et al. (2020) reported communication barriers in the ICU between patient families and healthcare workers related to high workload, educational background of the family, cultural differences, and age-related cognitive decline. Therefore, nurses need to possess therapeutic communication skills and adapt their approach to the family's circumstances.

In this case, the implementation of rounds has not been carried out due to the high workload of each profession. Consequently, the interprofessional team faces challenges in communication, collaboration, and decision-making, as the family may have differing opinions and beliefs about patient care. Research indicates that the presence of the family can pose ethical dilemmas for healthcare providers (Ervin et al., 2018). Conducting nursing rounds can provide an efficient forum for discussion with families without allocating specific time outside the rounds. It enables joint decision-making and provides insight into the patient's condition and progress (Cody et al., 2018). Engaging in rounds allows the family to be aware of the treatment plan, empowering them to act as safety checks if actions deviate from the planned course (Davidson et al., 2017).

Family Involvement Besides the Patient

In this case, the family was involved in providing olive oil and repositioning, accompanied by a nurse, providing spiritual guidance during visits, and offering overall support. Involving the family in oral care interventions was not feasible due to inadequate visitation time, and the investment of time required to teach the family about the procedures. Nonetheless, family involvement can alleviate the nurse's burden by assisting with tasks such as oral care, repositioning, ambulation, bathing, and feeding (Wyskiel et al., 2015). Moreover, family members witnessing procedures firsthand can enhance their understanding and encourage professional practice (Sevransky et al., 2017).

Further hospital policy development is necessary to support the implementation of family-centered care in the ICU, along with the need for support from medical staff to realize family-centered care. This approach ensures that care aligns with patients' and families' preferences, needs, rights, and obligations, while acknowledging the practical and emotional demands placed on them by healthcare professionals. Collaboration among all parties empowers them to work as partners in the patient's healthcare journey.

Conclusions

Patients with MODS require intensive care. However, the presence of family members being treated in the intensive care unit also affects the family system. In fact, the family plays an essential role in the patient's recovery. Family-centered care is defined as a partnership that positively impacts not only the patient but also their family members, addressing their needs as well. In this case study, the family was provided with information about the patient's condition, care plans, and evaluation results after procedures. They also received spiritual guidance, family support, and were involved in the procedures needed for the patient's care. The implementation of family-centered care comes with challenges and obstacles for both health workers and institutions, requiring further development that involves the input of medical personnel and hospital management.

Declaration of Interest

No conflict of interest

Acknowledgment

The author would like to give gratitude to patient and family members who want to be respondents in this study.

Funding

None

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

REFERENCES

Hamzah, A., Sukarni, S., &. Husni, A. (2017) Family care centre model could decrease anxiety level among family members of patients who have been undergoing in the intensive care unit (ICU). *Open Journal of Nursing, 7*(1), 58–67. http://dx.doi.org/10.4236/ojn.2017.71006

Asim, M., Amin, F., & El-Menyar, A. (2020). Multiple organ dysfunction syndrome: Contemporary insights on the clinicopathological spectrum. *Qatar medical journal, 2020*(1), 22. https://doi.org/10.5339/qmj.2020.22

Babaei, S., & Abolhasani, S. (2020). Family's supportive behaviors in the care of the patient admitted to the cardiac care unit: A qualitative study. *Journal of caring sciences, 9*(2), 80–86. https://doi.org/10.34172/jcs.2020.012

Beesley, S. J., & Brown, S. M. (2020). Family involvement in ICU. *Evidence-Based Critical Care: A Case Study Approach*, 805–812. https://doi.org/10.1007/978-3-030-26710-0_108

Cody, S. E., Sullivan-Bolyai, S., & Reid-Ponte, P. (2018). Making a connection: Family experiences with bedside rounds in the intensive care unit. *Critical Care Nurse, 38*(3), 18–26. https://doi.org/10.4037/ccn2018128

Davidson, J. E., Aslakson, R. A., Long, A. C., Puntillo, K. A., Kross, E. K., Hart, J., Cox, C. E., Wunsch, H., Wickline, M. A., & Nunnally, M. E. (2017). Guidelines for family-centered care in the neonatal, pediatric, and adult ICU. *Critical Care Medicine, 45*(1), 103–128. https://doi.org/10.1097/CCM.0000000000002169

De Nicola, L., Minutolo, R., Chiodini, P., Borrelli, S., Zoccali, C., Postorino, M., Iodice, C., Nappi, F., Fuiano, G., Gallo, C., Conte, G., & Italian Society of Nephrology Study Group Target Blood pressure Levels (TABLE) in CKD (2012). The effect of increasing age on the prognosis of non-dialysis patients with chronic kidney disease receiving stable nephrology care. Kidney international, 82(4), 482–488. https://doi.org/10.1038/ki.2012.174

Emaliyawati, E., Widiasih, R., Sutini, T., Ermiati, E., & Rahayu, U. (2020). Nurses reflections on challenges and barriers of communication in the intensive care unit: A phenomenology study. *Jurnal Keperawatan Padjadjaran, 8*(1), 65–73. https://doi.org/10.24198/jkp.v8i1.1190

Ervin, J. N., Kahn, J. M., Cohen, T. R., & Weingart, L. R. (2018). *Teamwork in the intensive care unit*. (Vol. 73, Issue 4). American Psychological Association.

Ghiyasvandian, S., Zakerimoghadam, M., & Peyravi, H. (2014). Nurse as a facilitator to professional communication: a qualitative study. *Global journal of health science, 7*(2), 294–303. https://doi.org/10.5539/gjhs.v7n2p294

Hu, F., Wang, W., Dou, H., Ling, L., Wang, D., Wang, Y., & Liu, F. (2018). Summary of the diagnosis and treatment of diabetic ketoacidosis complicated by multiple organ dysfunction syndrome in 21 patients. *International Journal Of Clinical And Experimental Medicine, 11*(5), 5305–5309.

Ippolito, M., Cortegiani, A., Biancofiore, G., Caiffa, S., Corcione, A., Giusti, G. D., Iozzo, P., Lucchini, A., Pelosi, P., & Tomasoni, G. (2022). The prevention of pressure injuries in the positioning and mobilization of patients in the ICU: a good clinical practice document by the Italian Society of Anesthesia, Analgesia, Resuscitation and Intensive Care (SIAARTI). *Journal of Anesthesia, Analgesia and Critical Care, 2*(1), 1–13. https://doi.org/10.1186/s44158-022-00035-w

Jacob, M., Horton, C., Rance-Ashley, S., Field, T., Patterson, R., Johnson, C., Saunders, H., Shelton, T., Miller, J., & Frobos, C. (2016). Needs of patients' family members in an intensive care unit with continuous visitation. *American Journal of Critical Care, 25*(2), 118–125. https://doi.org/10.4037/ajcc2016258

Klimasiński M. W. (2021). Spiritual care in the intensive care unit. *Anaesthesiology intensive therapy, 53*(4), 350–357. https://doi.org/10.5114/ait.2021.109920

Liu, V., Read, J. L., Scruth, E., & Cheng, E. (2013). Visitation policies and practices in US ICUs. *Critical care (London, England), 17*(2), R71. https://doi.org/10.1186/cc12677

Naef, R., von Felten, S., Petry, H., Ernst, J., & Massarotto, P. (2021). Impact of a nurse-led family support intervention on family members' satisfaction with intensive care and psychological wellbeing: A mixed-methods evaluation. *Australian critical care : official journal of the Confederation of Australian Critical Care Nurses, 34*(6), 594–603. https://doi.org/10.1016/j.aucc.2020.10.014

Poovazhagi V. (2014). Risk factors for mortality in children with diabetic keto acidosis from developing countries. *World journal of diabetes, 5*(6), 932–938. https://doi.org/10.4239/wjd.v5.i6.932

Schwartz, A. C., Dunn, S. E., Simon, H. F. M.,

Velasquez, A., Garner, D., Tran, D. Q., Jr, & Kaslow, N. J. (2022). Making family-centered care for adults in the ICU a reality. *Frontiers in psychiatry, 13*, 837708. https://doi.org/10.3389/fpsyt.2022.837708

Sevransky, J. E., Nicholl, B., Nicholl, J. B., & Buchman, T. G. (2017). Patient- and Family-centered care: First steps on a long journey. *Critical care medicine, 45*(5), 757–758. https://doi.org/10.1097/CCM.0000000000002431

Wyskiel, R. M., Weeks, K., & Marsteller, J. A. (2015). Inviting families to participate in care: a family involvement menu. *Joint Commission journal on quality and patient safety, 41*(1), 43–46. https://doi.org/10.1016/s1553-7250(15)41006-2