

Mitigating Challenges to Effective Management of Post-Intensive Care Syndrome (PICS)

Abstract

Introduction: Post-Intensive Care Syndrome (PICS) refers to collective manifesting effects of prolonged physical and cognitive impairments and mental health problems during or after the stay in intensive care unit (ICU). PICS significantly affect patients' quality of life and ability to return to their normal routines. The challenges of PICS have become more pervasive since the Covid-19 pandemic. The aim of this study is to examine the challenges to effective management of PICS and suggest tangible ways of addressing them to reduce the prevalence, impact on patients' wellbeing, quality of life and satisfaction with care services.

Methods: The descriptive survey is employed to make a critical analysis and systematic review of selected 2019—2024 literatures on PICS, the challenges, and the viable measures for managing the challenges effectively.

Results: There is a consensus on these: lack of awareness and inability to recognize the condition among healthcare professionals; the difficulty of predicting and managing the long-term effects of PICS; the significant emotional toll of PICS on patients and their families; and the fragmentation of healthcare systems, which together constrain effective management of PICS.

Conclusion: To attain effective management of PICS, a comprehensive multidisciplinary approach, which can address cognitive, physical, and psychological aspects of the condition, has to be adopted. Resorting to a meaningful interdisciplinary collaboration among healthcare professionals, widespread awareness about PICS, the symptoms, and the need for early interventions would guarantee patients' attainment of maximal outcomes and improved quality of life.

Keywords: Challenges, Effectiveness, Management, Post-Intensive Care Syndrome, Prevalence

Introduction

Post-Intensive Care Syndrome (PICS) encompasses a spectrum of physical, cognitive, and mental health challenges experienced by survivors of critical illness during or after their stay in an Intensive Care Unit (ICU). Coined in 2010 by the Society of Critical Care Medicine, PICS highlights the onset or exacerbation of impairments in physical, cognitive, and mental health resulting from the ICU experience (Brown et al., 2019; Needham et al., 2012). The multifaceted nature of PICS, as outlined by Geense (2021), Hwang (2020), and Wiertzema (2019), manifests in symptoms such as muscle weakness, cognitive impairment, anxiety, and depression, presenting complexities in its management. This adapted conceptual framework of PICS, depicting associated factors and outcomes, provides valuable insights into the comprehensive understanding of the syndrome and its implications.

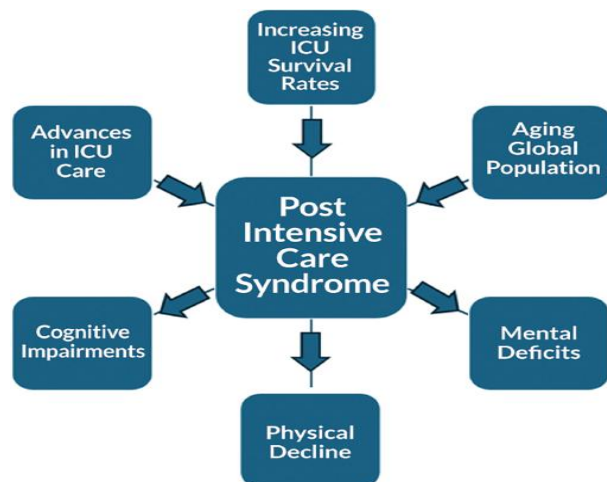


Fig. 1. Post intensive care syndrome

Source: Rutherford et al. (2024)

In light of the preceding discussion, this study aims to explore the challenges associated with effectively managing PICS while proposing additional remedies beyond those commonly suggested in prior research. Aligning with the assertions of Paul and Weiss (2022) regarding the imperative of addressing PICS management, this study underscores the significance of its thesis and advocacy. Motivated by the urgency highlighted by Rutherford et al. (2024), Hiser et al. (2023), Paul and Weiss (2022), and other scholars, this research seeks to mitigate the prevalence of PICS to enhance patient well-being, quality of life, and satisfaction with care services.

Prevalence of PICS: Reduction Imperative

Inoue et al. (2024) findings reveal that a substantial proportion, ranging from 50% to 70%, of ICU survivors experience PICS within six months post-discharge. This study underscores the pervasive nature of PICS in the post-Covid-19 era, corroborating the assertions made in this paper regarding its enduring prevalence since the onset of the pandemic in 2019. Similarly, Hiser et al. (2023) present evidence of escalating rates of PICS cases in recent years, further bolstering the argument on the prevalence of PICS. The high reported risk factors associated with PICS development, as highlighted by Physiopedia (2024) and Lee et al. (2020), emphasize the urgent need for comprehensive approaches to address this syndrome.

The persistent low decline in critical illness mortality rates from 1990 to 2017 compared with the significant rise in the prevalence of PICS since 2019, as noted by Rudd (2020), underscores the pressing need for heightened interventions to mitigate the impact of PICS on survivors of critical illness. As highlighted by Mulkey et al. (2022), the increasing number of critical illness survivors grappling with PICS necessitates a commensurate escalation in efforts to reduce its prevalence. Therefore, this study endeavors to contribute to this imperative by shedding light on the challenges hindering effective management of PICS and proposing actionable strategies to

mitigate its impact. By examining these challenges and offering tangible solutions, this research aims to make a meaningful contribution toward reducing the prevalence of PICS and enhancing the overall quality of care for ICU survivors.

Delirium emerges as a significant risk factor for cognitive impairment, as highlighted by Rutherford et al. (2024) and Lee et al. (2020), who underscore its association with the development of PICS. Additionally, previous mental health challenges are identified by Lee et al. (2020) as exacerbating the risk of PICS development. On the physical front, risk factors for PICS include advanced age, high disease severity, and female gender, with females exhibiting a higher susceptibility to PICS than males, as noted by Rutherford et al. (2024), Lee et al. (2020), Geense et al. (2021), and Physiopedia (2024). Acknowledging the need for further research to delineate the prevalence, severity, susceptibility, and intervention outcomes of PICS, this study aligns with the call for additional investigations into this syndrome. By examining the challenges impeding effective management of PICS and proposing mitigation strategies, this research aims to contribute to the advancement of knowledge in this critical area of healthcare.

Various studies, including those by Physiopedia (2024), Rutherford et al. (2024), Geense et al. (2021), and Brown et al. (2019; 2016), advocate for early mobilization of patients, particularly those at higher risk of developing PICS, as a pivotal strategy for mitigating its increasing prevalence. Emphasizing the pivotal role of physiotherapists in PICS management, these studies underscore the importance of proactive engagement by healthcare professionals in preventing and addressing PICS. Similarly, Mulkey et al. (2022) assert the significance of nurses in the intensive care unit (ICU) adopting proactive practices to minimize the risk of PICS development among patients. They advocate for problem-solving approaches to diminish the severity of disability and optimize patient outcomes, stressing the importance of nurses advocating for patients in need of specialized care. Collectively, this body of research highlights the urgency of addressing PICS-related challenges and offers scholarly insights into effective strategies for healthcare professionals to combat this syndrome.

This study underlines the importance of deploying multidimensional problem-solving approaches to effectively combat the high prevalence of PICS. Recognizing the significant burden on anesthesiologists and other healthcare providers in the ICU, proactive engagement in addressing factors contributing to PICS is essential. By providing additional need-based assistance and resources, healthcare professionals can yield substantial positive outcomes in mitigating PICS challenges and enhancing effective management of the syndrome. Moreover, enhancing and creating programs dedicated to PICS management are crucial steps toward addressing its complexities and combating its adverse effects. Additionally, this paper advocates for efforts to reduce the prolonged stay of critical illness patients in the ICU, as extended ICU stays can exacerbate the risk of developing PICS and have enduring negative impacts on patients, their families, and healthcare professionals. Shortening ICU stays could potentially mitigate the risk of PICS development and improve overall patient outcomes.

The treatment protocols administered to critical illness patients serve as a significant determinant contributing to the onset of PICS. Isolation from non-critically ill patients within the ICU environment exacerbates feelings of loneliness, nervousness, and depression among these individuals, often leading to the development of PICS. The confinement to ICU quarters can significantly impact patients' self-esteem and mental well-being, compounding the challenges they face during recovery. Cognitive impairments resulting from ICU stays frequently hinder survivors' ability to resume normal life routines or return to work, further diminishing their quality of life and overall well-being. Additionally, many patients grapple with physical debilitation, adding another layer of complexity to their recovery journey.

Challenges to Effective Management of PICS

Studies highlight the escalating pervasiveness of PICS in the wake of the Covid-19 pandemic (Geense, 2021; Nakanishi et al., 2021; Rudd, 2020; LaBuzetta et al., 2019), highlighting its detrimental impact on patients' quality of life and their ability to reintegrate into normal routines post-discharge. Research confirms that a substantial portion of ICU survivors grapple with diverse health challenges upon leaving the unit (Geense et al., 2021; Wang et al., 2020; Brown et al., 2019; Haines et al., 2019). These challenges manifest as a spectrum of symptoms, including cognitive impairment, mental health struggles, insomnia, anxiety, depression, weakness, fatigue, post-traumatic stress disorder (PTSD), and coping difficulties (Mulkey et al., 2022; Hwang, 2020; Wiertzema, 2019), collectively constituting PICS. The variability and unpredictability of these symptoms present formidable obstacles to the effective management of the syndrome.

The multifaceted nature of PICS presents numerous challenges in its effective management (Rutherford et al., 2024; LaBuzetta et al., 2019). Its elusive nature makes early detection and intervention challenging for both healthcare professionals and patients alike, complicating the implementation of timely measures. Beyond the physical manifestations, the cognitive and psychological components of PICS further exacerbate its management complexities. The cognitive impairment, emotional instability, and physical debilitation experienced by PICS patients contribute to the intricate landscape of challenges faced by healthcare providers. Addressing the diverse array of symptoms comprising PICS necessitates tailored approaches and individualized care plans, reflecting each patient's unique health status and requirements, underscoring the imperative for personalized and comprehensive management strategies within the ICU setting.

Insufficient understanding or awareness of PICS among healthcare professionals, patients, and their families presents a formidable obstacle to effective management (Rutherford et al., 2024; LaBuzetta et al., 2019). Without adequate knowledge, efforts toward intervention are hampered, underscoring the pivotal role of education and awareness. As the saying goes, "one who is not informed is deformed," highlighting the critical importance of being well-informed to effectively manage PICS. Comprehensive awareness initiatives targeting patients, families, and a range of healthcare professionals, including anesthesiologists, critical care physicians, nurses, and

surgeons, are imperative for addressing these challenges. Intensive educational efforts aimed at imparting detailed knowledge of PICS dynamics would facilitate the development of informed management strategies. Moreover, embracing multidisciplinary approaches and fostering interdisciplinary collaboration are advocated as additional remedies to mitigate these challenges, as proposed by current research.

Effective communication between healthcare professionals, patients, and their families is paramount for the successful management of PICS. Research underscores the challenges posed by communication barriers within the ICU, emphasizing the importance of implementing specific communication techniques to overcome these obstacles (Grant et al., 2021; Team Leader: Amy Fleming, 2021). Addressing these barriers is essential to ensure that support, care, and medications are delivered efficiently and accurately. Ali (2017) identifies common barriers such as background noise, demanding tasks, and lack of privacy, which hinder effective communication between nurses and patients. These same barriers impact communication across various medical professionals and patients, both within and beyond the critical care unit, underscoring the need for concerted efforts to ameliorate communication challenges and enhance the overall management of PICS.

Effective management of PICS faces significant hurdles stemming from inadequate logistical support, infrastructure, amenities, and personnel shortages. The scarcity of essential facilities essential for PICS management leads to myriad operational inefficiencies, compromised service delivery, quality assurance issues, and deficiencies in patient care. A deficiency in resources, programs, and projects exacerbates these challenges, emphasizing the critical need for sufficient resources to address PICS effectively. Moreover, social challenges such as stigma and misconceptions further complicate PICS management, as individuals may refrain from seeking help to avoid stigmatization. Addressing these social barriers requires comprehensive efforts to educate and sensitize the public, dispelling negative perceptions and fostering a supportive environment conducive to effective PICS management. These efforts must address deep-seated cultural, religious, and societal sentiments surrounding PICS to mitigate the impact of stigma and misconceptions on patients' access to care and treatment.

Mitigating Challenges of Effective Management of PICS

This paper section initially delineates commonly recognized strategies for effectively managing PICS and addressing associated challenges, drawing from existing literature. Subsequently, it offers its unique perspective on these strategies. Notably, a consensus emerges within the literature regarding the efficacy of interventions across the three main categories of PICS and its associated symptoms. Studies converge on pivotal physical interventions, encompassing physical therapy, early mobilization, nutritional assessment and enhancement, rehabilitation, utilization of recovery manuals, exercise regimens, and nursing interventions such as ongoing monitoring, prescription management, and follow-up care (Inoue et al., 2024; Rutherford et al., 2024; Renner

et al., 2023; Henao-Castaño et al., 2022; Geense, 2021; Davidson et al., 2020; Hwang, 2020; Vranceanu et al., 2020; Brown et al., 2019).

Scholars align on diverse strategies to effectively address the mental and social health dimensions of PICS, encompassing the utilization of ICU diaries, early psychological interventions, nurse-led preventative measures, animal-assisted therapy, open visitation policies, internet-based cognitive interventions, and peer and family support networks, alongside rehabilitation programs (Inoue et al., 2024; Rutherford et al., 2024; Mulkey et al., 2022; Hwang, 2020; Brown et al., 2019; Wiertzema, 2019). Moreover, there is unanimous acknowledgment of the pivotal role of cognitive interventions, predominantly through cognitive therapy delivered at home and digital cognitive rehabilitation platforms, as emphasized across studies (Inoue et al., 2024; Rutherford et al., 2024; Renner et al., 2023; Henao-Castaño et al., 2022; Davidson et al., 2020; Hwang, 2020).

A consensus emerging from multiple literature sources underscores the effectiveness of interventions facilitated through care coordination and personalized care planning, as evidenced by studies (Inoue et al., 2024; Rutherford et al., 2024; Henao-Castaño et al., 2022). These interventions encompass a range of strategies, including the transition of elderly ICU patients to geriatric wards, the implementation of multifaceted programs, medication management protocols, mobile care coordination initiatives led by nurses, and disease management support services (Brown et al., 2019; Sevin et al., 2018; Khan et al., 2015; Stollings et al., 2018; Olola, 2024; Khan et al., 2018).

Given the noted inefficacy of many interventions (Brown et al., 2019), it becomes imperative to elevate efforts and explore alternative measures or strategies. Interventions ought to be tailored to address the four principal dimensions central to the lives of survivors, which are pivotal to the syndrome's dynamics. It is incumbent upon survivors and their families to diligently uphold and adhere to the treatment regimens prescribed during hospitalization. Achieving effective interventions necessitates a heightened dedication to scholarly and scientific inquiry into PICS.

Within the scope of this discourse, social interventions emerge as paramount, exhibiting superior efficacy and comprehensiveness while synergistically interfacing with other intervention modalities. Social interventions encompass a broad array of factors, including but not limited to, fostering support networks, mitigating instances of discrimination, providing guidance, facilitating effective communication, and nurturing sustained social interaction and harmonious relationships.

Social interventions encompass strategies aimed at bridging any gap between the survivor and their family members, ensuring equitable treatment and inclusion, and actively engaging them in health-promoting social activities. These activities encompass a diverse range, including recreational pursuits such as games, sports, and dance, as well as intellectual endeavors like reading, participation in group activities, and membership in community organizations.

Importantly, many of these activities exert positive influences on cognitive functioning, thereby enhancing the overall well-being of survivors who partake in them.

Furthermore, rehabilitation efforts (Renner et al., 2023), lifestyle adjustments, adherence to medication regimens as prescribed, regular exercise, and adherence to balanced nutritional habits represent pivotal components in addressing both the physical and psychological dimensions of the syndrome. These interventions offer tangible avenues for mitigating the adverse effects of PICS, particularly within the realms of physical and psychological health.

The paper advocates for the implementation of repeated pre-discharge diagnoses as a pivotal measure in addressing the challenges associated with effectively managing PICS and combating its detrimental impact. Additionally, providing ongoing support to discharged patients, such as through regular communication via phone and other modern media platforms, can significantly contribute to their sustained health and expedited recovery. This approach encompasses the integration of telepsychology interventions (Olola, 2024), which hold promise in extending psychological support to patients beyond the confines of the hospital setting.

Furthermore, healthcare professionals in the ICU should allocate resources to facilitate patient and family education initiatives. In addition to equipping them with essential resources, it is imperative to educate them on the risk factors, symptoms, and the significance of early interventions for PICS. This educational endeavor aims to empower patients and their families with comprehensive knowledge, ensuring they are well-informed about the nuances of PICS and equipped to navigate its challenges effectively, thus averting potential complications arising from misinformation or ignorance.

Physical rehabilitation stands as a vital avenue for both confronting PICS and surmounting the obstacles to its effective management. Following prolonged stays in the ICU, the implementation of physical interventions such as tailored exercises and body therapy emerges as a promising approach yielding favorable outcomes. These interventions facilitate the restoration of patients' physical fitness, enhancement of balance and coordination, and augmentation of overall physical functionality. Fundamentally, physical rehabilitation plays a pivotal role in enabling patients to reclaim their physical prowess, foster independence, and ultimately elevate their quality of life.

Moreover, mitigating the cognitive challenges inherent in managing PICS necessitates the development and implementation of pragmatic strategies capable of addressing these issues head-on. Survivors commonly contend with a spectrum of cognitive hurdles, including difficulties with concentration, indecisiveness, delirium, and memory impairment. Effectively addressing these challenges mandates the deployment of targeted cognitive interventions and measures aimed at bolstering cognitive functioning and ameliorating the associated cognitive impairments.

Cognitive psychology offers a multifaceted approach to addressing the psychological struggles encountered by survivor patients, including cognitive dysfunction, memory loss, diminished

concentration, depression, and post-traumatic stress disorder (PTSD) (Wiertzema, 2019). These cognitive interventions not only aid individuals in coping with such challenges but also serve as effective tools for combating PICS and alleviating the associated management hurdles. Consistent counseling, as a cognitive intervention, emerges as a particularly valuable means of mitigating the complexities of managing PICS. Thus, while cognitive challenges pose significant obstacles in the management of PICS, cognitive strategies serve a dual purpose: combating the condition itself and mitigating the challenges inherent in its management.

The effective management of PICS hinges significantly on the meticulous administration and monitoring of medication regimens. Following discharge, patients receiving post-discharge medications require diligent follow-up to ensure adherence and proper intake. Monitoring of medication efficacy and potential side effects necessitates the collaborative expertise of the family physician and pharmacist, who may recommend adjustments to mitigate adverse reactions or allergies. Furthermore, dietary and lifestyle modifications are paramount, requiring consistent and supportive counseling to foster patient compliance. For instance, smokers and individuals consuming stimulating substances must be counseled and encouraged to cease these habits. Introducing survivors to improved dietary practices and routines serves to effectively address their PICS manifestations and enhance overall management outcomes.

Conclusion

The advent of the Covid-19 era has brought to the forefront a concerning surge in the prevalence of PICS, prompting profound apprehension among healthcare professionals, policymakers, and researchers alike. This surge has catalyzed a concerted effort to discern the underlying causes of PICS prevalence and to devise strategies aimed at its reduction and the amelioration of associated management challenges. Despite the acknowledged hurdles delineated in various scholarly works, the collective consensus underscores the potential for mitigating PICS and its challenges through sustained and multifaceted approaches. The imperative for continuous and intensified exploration of interventions underscores the necessity for survivor support systems encompassing guidance, encouragement, rehabilitation, effective communication, and familial assistance, all pivotal for facilitating the resumption of normal life routines post-ICU discharge.

Addressing the multifaceted challenges inherent in managing PICS not only entails ameliorating its symptoms but also embodies an overarching endeavor to combat the syndrome itself. The effectiveness in mitigating these challenges mirrors success in managing PICS, with comprehensive strategies spanning cognitive, psychological, physical, and social dimensions. By adopting such holistic approaches, healthcare providers can play a pivotal role in facilitating patient recovery and enhancing long-term outcomes. However, the complexity and frustrations inherent in managing PICS necessitate ongoing efforts and innovation, demanding healthcare professionals, including anesthesiologists, to persist in their pursuit of improved measures and outcomes.

Furthermore, the clandestine nature of PICS, often eluding detection by both patients and healthcare providers in the ICU, underscores the critical importance of proactive education and awareness initiatives. Empowering patients and their families with the knowledge to recognize and manage PICS symptoms is paramount, necessitating the mentorship of junior healthcare colleagues by seasoned professionals. Pre-discharge counseling sessions should equip patients and their loved ones with the tools to identify potential risk factors and mitigate adverse outcomes associated with PICS. These educational efforts extend beyond symptom recognition to encompass the prevention of stigmatization, discrimination, and misconceptions surrounding PICS survivors, thereby forming a crucial component of a multifaceted strategy for effective PICS management and challenge mitigation.

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