

EFFECTIVENESS OF MULTIDISCIPLINARY TEAM MEMBERS IN A COMPLEX, HIGH-RISK, AND STRESSFUL CRITICAL CARE UNIT (CCU)

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ABSTRACT

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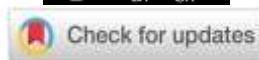
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Abstract:

Background: Critical Care Unit (CCU) serves as the most complex unit of the health care sector. The performance of multi-disciplinary team members working in CCU is affected through various factors such as; ineffective leadership, lack of communication, inappropriate team structuring etc. This study aims to evaluate the performance effectiveness of multidisciplinary team members working in the complex, risky and stressful environment of the critical care unit of Alansar General Hospital (AGH). **Methods:** A descriptive correlational study design is used. Data were collected through a structured questionnaire provided to a sample of 56 nurses working in CCU. **Results:** Findings indicated that the team working in CCU face problems due to ineffective conflict handling. Competent leadership is effective in providing appropriate team structure. Also, communication between team members helps in making useful decisions by using the knowledge gained through team communication. **Conclusion:** Multidisciplinary teams must be provided effective training to promote quality communication, knowledge sharing, and proper team structuring to improve quality of health care.

Abstrak:

Latar belakang: Unit Perawatan Kritis (CCU) berfungsi sebagai unit paling kompleks dari sektor perawatan kesehatan. Kinerja anggota tim multidisiplin yang bekerja di CCU dipengaruhi melalui berbagai faktor seperti; kepemimpinan yang tidak efektif, kurangnya komunikasi, penataan tim yang tidak tepat, dll. Penelitian ini bertujuan untuk mengevaluasi efektivitas kinerja anggota tim multidisiplin yang bekerja di lingkungan yang kompleks, berisiko dan penuh tekanan dari unit perawatan kritis Alansar General Hospitals (AGH). **Metode:** Desain penelitian deskriptif korelasional digunakan dalam penelitian ini. Data dikumpulkan melalui kuesioner terstruktur yang disediakan untuk sampel 56 perawat yang bekerja di CCU. **Hasil :** Temuan menunjukkan bahwa tim yang bekerja di CCU menghadapi masalah karena penanganan konflik yang tidak efektif. Kepemimpinan yang kompeten efektif dalam menyediakan struktur tim yang tepat. Juga, komunikasi antara anggota tim membantu dalam membuat keputusan yang bermanfaat dengan menggunakan pengetahuan yang diperoleh melalui komunikasi tim. **Kesimpulan:** Tim multidisiplin harus diberikan pelatihan yang efektif untuk mempromosikan komunikasi yang berkualitas, berbagi pengetahuan, dan penataan tim yang tepat untuk meningkatkan kualitas perawatan kesehatan.



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INTRODUCTION

Critical health care decisions that are undertaken during highly stressful situations, while following ethical practices serves as an integral part of the critical care unit (CCU) environment. Despite of the increased pressure, most of the professionals choose to work under such environments to deliver quality health care to patients. Medical teams including highly qualified doctors and physicians are all part of this intense environment, making endless efforts to provide quality healthcare to patients. For instance; in United States, the multidisciplinary team of cardiac critical care unit consists of various healthcare professionals that includes; medical residents, cardiologists, nurses, cardiology fellows, respiratory therapist and ICU pharmacist.

The environment of critical care units makes an important contribution towards critical care treatment as nursing culture of CCU differ from any other department. The critical care environment is further concentrated with members that provide important guidance regarding useful interactions and decision-making processes during crucial situations. Liberati et al. [1] outlined that multidisciplinary team members in critical care unit consists of a range of medical professionals, belonging to different disciplines that possess additional knowledge, skills and expertise. Multidisciplinary teams are often kept motivated through high level spirit and enthusiasm which are essential to address patients' complex health care needs. It further ensures that treatment must be provided through patients centered approach, while ensuring their safety and healthcare quality. Fanari et al. [2] related the idea as an instance regarding the effectiveness of multidisciplinary team approach specifically in cardiac care unit. According to the study, medical team that works in critical care unit is responsible to provide improvements in patient's care, resulting in the decreased rate of patient's mortality. Multidisciplinary team members

work through highly observational, insightful and careful interpretation, since the slightest error may turn in worsening patient's condition [3]. Maximum care for patients is expected from multidisciplinary team members and nursing professionals to reduce the chances of future complexity.

Critical care unit demands a team following the multidisciplinary approach that includes nurses, pharmacists, intensivist, dietitian, physical therapist, respiratory therapists along with other staff members that are unified to provide critical care treatment while ensuring patient's life security [4]. Liberati et al. [1] highlighted that in certain cases, multidisciplinary teamwork in critical care units remains ineffective, due to the implication of theory of boundaries that addresses the barriers hindering the process of quality healthcare. Such situations demand restructuring of multidisciplinary workforce. Fernando et al. [5] pinpointed the performance effectiveness of multidisciplinary approach, since 10% of the overall hospital budget is dedicated to critical care units, with an aim to provide quality care.

Quality performance of multidisciplinary team, working in critical care unit is highly significant, as high budget is spent towards the unit to make the effective use of resources for quality health care. It further poses a responsibility that includes the effective use of medical resources placed within the critical care unit. Hospitals seek to develop various strategies that helps in monitoring the performance of multidisciplinary teams working in the given sector, to include changes and developments within the critical care center. Thus, the study aims to evaluate the performance effectiveness of multidisciplinary team members working in the complex, risky and stressful environment of the critical care unit.

Contribution of this study is imperative as it may help in the performance evaluation of multidisciplinary team members working in

critical care environments, while highlighting the major gaps in the everyday work practices of CCU. The study is important in determining the factors that are highly critical and important for multidisciplinary teams working in such critical environments. Components such as; teamwork attitude and effectiveness within critical care settings are also observed, which are beneficial for team members working in CCU. Nurses, doctors and policy makers of hospitals may benefit from this study, since the information is related to the ways that may improve teamwork in health care settings.

Performance effectiveness along with different methods that are important to improve the performance of multidisciplinary team members serve as the topic of interest for various researchers [2], [6]–[8]. Rochon [9], while studying the significance of teamwork and staffing, emphasized the value of teamwork strategies in enhancing the patient care. The study elaborated that the factor is crucial as it is directly related to job satisfaction as well as quality of patient care. For Nelsey and Brownie [7], communication serves as the key factor for the successful patient care in critical care units. Siassakos et al. [10] suggested that effective teamwork collaboration is important to reduce the negative perceptions of multidisciplinary teams regarding staffing which serve as a greater challenge under such situations. The study further outlined that the best patient care in critical care units is only possible through useful approaches that promote accurate staffing and clinical training. Rochon et al. [9] further added that planned and accurate staffing is important to promote effective teamwork.

Katz et al. [11] focused on the most common issue of the emergency care, where multidisciplinary team members lack the ability to accept their medical errors. Therefore, to mitigate the issue, stimulation based approach trainings are provided to the related members that promotes basic knowledge of patients in managing stress

and performance effectiveness in highly critical situations [8]. Lui and Whitman [12] outlined three fundamental factors that are important in promoting effective performance, namely, the proper staffing of critical care unit members, the effective rounds of multidisciplinary team members, and the promotion of open communication among team members.

Murphy et al. [13] assessed that threats during patient's safety concerns are mostly associated to the lack of non-technical skills in multidisciplinary teams, such as; the situational awareness, decision making and planning followed by the interpersonal skills including communication, leadership and teamwork. Murphy, Curtis and McCloughen [13] added that multidisciplinary teams that are trained through simulation approach, are effective in providing valuable results in terms of crisis resource management which is required to make effective decisions during emergency situations. The approach is highly useful in promoting the specialized team efforts in the form of quality performance. Therefore, multidisciplinary teams working in critical care units, when trained through simulation-based training helps in overcoming the barriers of quality care in a swift manner.

Fernando et al. [5] added that in various critical care departments, prior focus is provided to the selection of highly responsible physicians with shuffled duties, while others are assigned for routine checkups. Critical care consultation often takes place on the basis of ad hoc, in cases where treatments are associated to multiorgan failure.

RESEARCH METHOD

A descriptive correlational study design is used and nurses working in Alansar General Hospital (AGH), Saudi Arabia serves as the population of this study. A sample of 56 nurses was selected through purposive sampling technique. The sample size was determined through G-power analysis to provide the accurate

representation of nurses working in CCU. The inclusion criteria involve nurses with assigned duties specifically in Critical Care Units (CCU). Whereas, nurses working in any other department were excluded from the study.

Data were collected using a structured questionnaire. The questionnaire was based on two parts. Part 1 assessed the attitude of nurses working as a team in CCU. Part 1 consisted 30 items in the form of open-ended questions to provide the overall evaluation of teamwork attitude. Part 2 on the other hand was designed for performance effectiveness in CCU, and was based on 11 items. Five-point Likert Scale ranging from (1) Strongly Agree to (5) Strongly Disagree was used in both parts of the questionnaire. However, scores less than 40 represents problems in the teamwork. The overall reliability of questionnaire was Cronbach's $\alpha=0.90$ that is considered high. An approval along with the ethical clearance for participation in the study was obtained from Institute Review Board of King Saud University-College of Medicine (KSU-COM). Another approval was obtained from the director of Alansar General Hospital before the data

collection. An informed consent was provided to patients prior their participation in the study ensuring confidentiality and anonymity.

Data were analyzed through Statistical Package of Social Sciences (SPSS) version 23.0. Descriptive statistics was used to provide categorical values, including the frequency, average weight and percentage. Spearman Rank Coefficient was used to determine the relationship between attitude and effectiveness of teamwork. P-value up to <0.05 was used to determine the statistical significance, followed by the confidence interval of 95% to derive inferences of mean difference.

RESULTS AND DISCUSSION

Table 1 shows the descriptive values measuring the effectiveness of teamwork among nurses. According to the results, highest mean value of 2,63 is attained for "Team members express their opinions honestly and openly to each other." Whereas, minimum mean value of 2,25 is attained for "Conflict between or among team members is handled promptly and effectively."

Table 1.
Descriptive Statistics Measuring Teamwork Effectiveness

Questions	Mean Value	St. Deviation
Team members put the interests and priorities of the organization or unit ahead of the interests and priorities of their respective jobs or functions.	2,59	1,023
Team members obtain and use all the needed information and assistance from others when solving problems or making decisions.	2,30	0,851
The team is organized and structured suitably for the tasks it has to perform	2,48	1,009
Team problem solving processes and methods are appropriate and effective.	2,38	0,906
Team decision making processes and methods are appropriate and effective.	2,55	0,913
Team members participate meaningfully in higher-level decisions affecting their jobs or functions.	2,48	0,934
Team members receive the guidance and resources they need from the team manager to do their jobs.	2,32	0,789
Team members express their opinions honestly and openly to each other.	2,63	0,983
Team members make good use of the time they spend together.	2,20	0,883
Every team member knows what the other team members expect from him or her.	2,41	0,930
Conflict between or among team members is handled promptly and effectively.	2,25	0,879

Table 2.
Correlation Coefficient of Team structure, Leadership and Situation Monitoring
with performance effectiveness

Questions	Team Structure	Leadership	Situation Monitoring
Correlation Coefficient (p<0.05)			
Team members put the interests and priorities of the organization or unit ahead of the interests and priorities of their respective jobs or functions.	0,070	-0,225	0,168
Team members obtain and use all the needed information and assistance from others when solving problems or making decisions.	-0,073	0,191	0,148
The team is organized and structured suitably for the tasks it has to perform	-0,132	-0,071	-0,082
Team problem solving processes and methods are appropriate and effective.	0,098	-0,285*	-0,300*
Team decision making processes and methods are appropriate and effective.	0,221	-0,120	-0,152
Team members participate meaningfully in higher-level decisions affecting their jobs or functions	0,241	0,135	0,004
Team members receive the guidance and resources they need from the team manager to do their jobs.	-0,277	-0,079	0,337*
Team members express their opinions honestly and openly to each other.	0,019	-0,162	-0,165
Team members make good use of the time they spend together.	-0,026	-0,037	0,143
Every team member knows what the other team members expect from him or her.	0,133	0,090	0,011
Conflict between or among team members is handled promptly and effectively.	0,159	0,123	-0,045

Table 2 presents the correlation of team structure, leadership, situation monitoring, mutual support and communication with the performance effectiveness of teamwork. Findings indicated a positive correlation (0,070) between team structure and organizational priorities. A negative correlation (-0,073), (-0,132), (-0,277) and (-0,026) of team structure was found with the use of information in solving complex problems, the organized planning of the team in everyday tasks, guidance of team managers, and good usage of time respectively. A positive correlation was found between team structure and the effectiveness of team's problem solving method, the appropriateness of team's decision making process, participation of team members in decision making process, open expression of opinion among team members, individual expectations of the

team members and prompt conflicts of team members, as illustrated through the given values i.e. 0,098, 0,221, 0,241, 0,019, 0,133, and 0,159 respectively.

A significant negative correlation (-0,285*) was found between leadership and the effectiveness of team's problem-solving skills. Whereas, a negative correlation of leadership was detected with 'team members put the interests and priorities of the organization or unit ahead of the interests and priorities of their respective jobs or functions (-0,225),' 'the team is organized and structured suitably for the tasks it has to perform (-0,071),' 'team decision making processes and methods are appropriate and effective (-0,120),' 'team members receive the guidance and resources they need from the team manager to do their jobs (-0,079),' 'team members express their opinions honestly and openly to each other (-0,162),' and 'team members

make good use of the time they spend together (-0,037).'

Findings further indicated a positive correlation of leadership with 'team members obtain and use all the needed information and assistance from others when solving problems or making decisions (0,191),' 'team members participate meaningfully in higher-level decisions affecting their jobs or functions (0,135),' 'Every team member knows what the other team members expect from him or her (0,090),' and 'Conflict between or among team members is handled promptly and effectively (0,123).'

For situation monitoring; a positive correlation was found with 'team members put the interests and priorities of the organization or unit ahead of the interests and priorities of their respective jobs or functions (0,168),' 'team members obtain and use all the needed information and assistance from others when solving

problems or making decisions (0,148),' 'team members participate meaningfully in higher-level decisions affecting their jobs or functions (0,004),' 'team members make good use of the time they spend together (0,143),' 'every team member knows what the other team members expect from him or her (0,011)'. Similarly, statements including 'the team is organized and structured suitably for the tasks it has to perform (-0,082),' 'team decision making processes and methods are appropriate and effective (-0,152),' 'team members express their opinions honestly and openly to each other (-0,165)', and 'Conflict between or among team members is handled promptly and effectively (-0,045)' shared a negative relationship with situation monitoring. Lastly, 'team problem solving processes and methods are appropriate and effective' is significantly negative correlated with situation monitoring, as clear from the attained value of -0,300*.

Table 3.
Correlation of Mutual Support and Communication with Performance Effectiveness

Questions	Mutual Support Correlation Coefficient (p<0.05)	Communication Correlation Coefficient (p<0.05)
Team members put the interests and priorities of the organization or unit ahead of the interests and priorities of their respective jobs or functions.	-0,206	-0,072
Team members obtain and use all the needed information and assistance from others when solving problems or making decisions.	-0,067	0,060
The team is organized and structured suitably for the tasks it has to perform	0,185	0,135
Team problem solving processes and methods are appropriate and effective.	-0,093	0,057
Team decision making processes and methods are appropriate and effective.	0,056	0,129
Team members participate meaningfully in higher-level decisions affecting their jobs or functions	-0,126	-0,040
Team members receive the guidance and resources they need from the team manager to do their jobs.	-0,162	-0,046
Team members express their opinions honestly and openly to each other.	0,006	0,162
Team members make good use of the time they spend together.	-0,093	0,219
Every team member knows what the other team members expect from him or her.	-0,057	0,272*
Conflict between or among team members is handled promptly and effectively.	-0,078	0,136

Table 3 indicates the correlation of mutual support and communication with performance effectiveness. A negative correlation was obtained for 'team members put the interests and priorities of the organization or unit ahead of the interests and priorities of their respective jobs or functions (-0,206)', 'team members obtain and use all the needed information and assistance from others when solving problems or making decisions (-0,067)', 'team problem solving processes and methods are appropriate and effective (-0,093)', 'team members participate meaningfully in higher-level decisions affecting their jobs or functions (-0,126)', 'team members receive the guidance and resources they need from the team manager to do their jobs (-0,162)', 'team members make good use of the time they spend together (-0,093)', 'every team member knows what the other team members expect from him or her (-0,057)', and 'Conflict between or among team members is handled promptly and effectively (-0,078)'. In contrast to this, statements such as; 'the team is organized and structured suitably for the tasks it has to perform (0,185)', 'team decision making processes and methods are appropriate and effective (0,056)', 'team members express their opinions honestly and openly to each other (0,006)' indicated a positive correlation with mutual support and performance effectiveness.

For correlation of communication, a positive relationship was attained between 'team members obtain and use all the needed information and assistance from others when solving problems or making decisions (0,060)', 'the team is organized and structured suitably for the tasks it has to perform (0,135)', 'team problem solving processes and methods are appropriate and effective', 'team decision making processes and methods are appropriate and effective (0,057)', 'team members express their opinions honestly and openly to each other (0,129)', 'team members make good use of the time they spend together (0,162)',

'every team member knows what the other team members expect from him or her (0,219)', and 'conflict between or among team members is handled promptly and effectively (0,136)'. Whereas, negative correlation of communication is obtained for 'team members put the interests and priorities of the organization or unit ahead of the interests and priorities of their respective jobs or function (-0,072)', 'team members participate meaningfully in higher-level decisions affecting their jobs or functions (-0,040)', 'team members receive the guidance and resources they need from the team manager to do their jobs (-0,046)'. Finally, a significant positive correlation is found between communication and 'every team member knows what the other team members expect from him or her (0,272*)'.

The study presents important outcomes related to the performance effectiveness of multidisciplinary team members in highly stressful environment of critical care unit. Findings indicated that major problem occurs in the form of ineffective conflict management among multidisciplinary team members. Furthermore, a positive correlation between team structure and their ability in solving complex problems was attained. Similarly, a negative correlation was obtained between leadership ability and decision-making process, along with mutual support and performance effectiveness. A positive correlation between communication and decision-making process was also indicated.

Present findings are endorsed by Richardson, West and Cuthbertson [6], who demonstrated that team communication is effective in achieving the shared team goals. They further outlined that despite of greater efforts in this area, many teams lack the ability to communicate effectively which ultimately affect the quality of patient care. Also, a significant emphasis was provided to the idea of teamwork that is highly dependent on effective team structuring. Ervin et al. [14] supported the

effectiveness of teamwork and indicated that proper team structure is essential to promote quality performance of the multidisciplinary team. Marini, Khan and Mundekkadani [15] specified that effective team structuring enables the team to conduct multidisciplinary rounds and supports in attaining the effective treatment outcomes. Findings of the study are similar to those proposed in the present study, where effective teamwork is found essential followed by the communication to create a significant impact on individual performances. Concerning the interactions between different team members, Murphy, Curtis and McCloughen [13] proposed similar findings as in present study. They further indicated that effective teamwork is essential to develop shared strategies for patient's healthcare. Present findings related to the team structuring and team performance are similar to those proposed by O Porter, Cant and Cooper [16], according to which team structuring and effective leadership were important contributors for performance effectiveness. This study is important and can assist multidisciplinary team leaders in developing useful strategies that may help in creating a dynamic work environment fostered through effective communication. It is further useful for hospital administrations, to analyze the gap in the CCU work environment incorporated through multidisciplinary themes. The results of this study can be implied to examine the performance effectiveness of multidisciplinary team members in the stressful and risky environment of critical care units.

CONCLUSION

Multidisciplinary team members working in CCU of Alansar General Hospital needs effective training to promote quality communication, knowledge sharing efforts, and proper team structuring for developing improvements in care quality. These factors are important in

creating a significant influence over performance of the multidisciplinary teams in critical care environments.

Limitations of this study include data that is obtained from a single hospital, which lacks the probability of generalizability of results. Since the study follows a descriptive correlational design, identification of useful strategies is important to provide useful knowledge to the concerned authorities. Another limitation is the small sample size that has restricted the idea of gaining differences in perceptions of both team leaders and the structured staff. Therefore, future researchers are suggested to conduct the study using a large sample size, also by illustrating the difference in opinions of both team-members and team leaders.

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REFERENCES

- [1] E. G. Liberati, M. Gorli, and G. Scaratti, "Invisible walls within multidisciplinary teams: disciplinary boundaries and their effects on integrated care," *Soc. Sci. Med.*, vol. 150, pp. 31–39, 2016.
- [2] Z. Fanari, A. Barekatain, R. Kerzner, S. Hammami, W. S. Weintraub, and V. Maheshwari, "Impact of a multidisciplinary team approach including an intensivist on the outcomes of critically ill patients in the cardiac care unit," in *Mayo Clinic Proceedings*, 2016, vol. 91, no. 12, pp. 1727–1734.
- [3] S. Scholtz, E. W. Nel, M. Poggenpoel, and C. P. H. Myburgh, "The culture of nurses in a critical care unit," *Glob. Qual. Nurs. Res.*, vol. 3, p. 2333393615625996, 2016.

- [4] B. T. Wessman, C. Sona, and M. Schallom, "Improving caregivers' perceptions regarding patient goals of care/end-of-life issues for the multidisciplinary critical care team," *J. Intensive Care Med.*, vol. 32, no. 1, pp. 68–76, 2017.
- [5] S. M. Fernando *et al.*, "Monitoring intensive care unit performance—impact of a novel individualised performance scorecard in critical care medicine: a mixed-methods study protocol," *BMJ Open*, vol. 8, no. 1, p. e019165, 2018.
- [6] J. Richardson, M. A. West, and B. H. Cuthbertson, "Team working in intensive care: current evidence and future endeavors," *Curr. Opin. Crit. Care*, vol. 16, no. 6, pp. 643–648, 2010.
- [7] L. Nelsey and S. Brownie, "Effective leadership, teamwork and mentoring--Essential elements in promoting generational cohesion in the nursing workforce and retaining nurses," *Collegian*, vol. 19, no. 4, pp. 197–202, 2012.
- [8] V. Brunette and N. Thibodeau-Jarry, "Simulation as a tool to ensure competency and quality of care in the cardiac critical care unit," *Can. J. Cardiol.*, vol. 33, no. 1, pp. 119–127, 2017.
- [9] A. Rochon, "Teamwork and staffing in an acute care hospital," Laurentian University of Sudbury, 2014.
- [10] D. Siassakos *et al.*, "Attitudes toward safety and teamwork in a maternity unit with embedded team training," *Am. J. Med. Qual.*, vol. 26, no. 2, pp. 132–137, 2011.
- [11] J. N. Katz *et al.*, "The genesis, maturation, and future of critical care cardiology," *J. Am. Coll. Cardiol.*, vol. 68, no. 1, pp. 67–79, 2016.
- [12] C. Lui and G. Whitman, "Cardiac Intensive Care Units: What Should Be the Standard of Care?," in *Seminars in thoracic and cardiovascular surgery*, 2019, vol. 31, no. 1, pp. 7–10.
- [13] M. Murphy, K. Curtis, and A. McCloughen, "What is the impact of multidisciplinary team simulation training on team performance and efficiency of patient care? An integrative review," *Australas. Emerg. Nurs. J.*, vol. 19, no. 1, pp. 44–53, 2016.
- [14] J. N. Ervin, J. M. Kahn, T. R. Cohen, and L. R. Weingart, "Teamwork in the intensive care unit.," *Am. Psychol.*, vol. 73, no. 4, p. 468, 2018.
- [15] A. L. Marini, R. Khan, and S. Mundekkan, "Multifaceted bundle interventions shown effective in reducing VAP rates in our multidisciplinary ICUs," *BMJ Open Qual.*, vol. 5, no. 1, pp. u205566--w2278, 2016.
- [16] J. E. Porter, R. P. Cant, and S. J. Cooper, "Rating teams' non-technical skills in the emergency department: A qualitative study of nurses' experience," *Int. Emerg. Nurs.*, vol. 38, pp. 15–20, 2018.