



(REVIEW ARTICLE)



Bibliometric review of credentialing and quality in healthcare field

Adith Septyan Ikhwan* and Iman Permana

Master of Hospital Administration, Muhammadiyah Yogyakarta University, Bantul, Daerah Istimewa Yogyakarta, Indonesia.

World Journal of Advanced Research and Reviews, 2023, 17(01), 308–317

Publication history: Received on 01 December 2022; revised on 05 January 2023; accepted on 08 January 2023

Article DOI: <https://doi.org/10.30574/wjarr.2023.17.1.0032>

Abstract

Health service credentials are important because they can improve the quality and profitability of health care facilities. Performance improvement through structured credentialing needs to be carried out continuously to support the quality of health care facilities, both in terms of skills, knowledge, and behavior in the work environment. Evidence-based implementation of credentials to support the quality of health services needs to be reviewed further because science and technology are increasingly developing. A series of selection went through 1705 publications and 639 publications meet the desired criteria in Scopus Database (Publications from 2011-2021 using keywords: 'credentialing' AND 'quality', and within medicine-related field of study). The data then being analyzed using VOSViewer to form whole 4 clusters. The majority of studies was held in America. Most cited publications are about standardization of medical processes. Throughout cluster themes assessed, the main topic of the publications was described as such: Standardization actions, and credentialing team programs. Future reviews with similar approach are needed to further expand new ideas to improve healthcare service quality.

Keyword: Bibliometric Review; Credentialing; Quality; Healthcare

1. Introduction

A healthcare credential is a method used by organizations to obtain and validate the credentials of caregiver practitioners [1, 2]. Credentials can be used to improve the quality of health services [3] and lower costs [4]. With proper interpretation of imaging, a doctor will rarely consult a radiologist for imaging [5]. Costs will decrease when drug usage is efficient and income will increase by higher outpatient visits [6]. Health service credentials are important because they can improve the quality and profitability of health care facilities.

Credentials in healthcare can be used to improve performance [7], skills, and behavior in-between caregivers [8]. With credentials, caregivers can improve efficiency, safety, and the expected effect of a therapy [9]. With excellent standardization, unexpected events can be prevented [10], such as: prescription error [11] miscommunications [12]. Performance improvement with credentials can work effectively if health workers have self-reflection on medical problems [13]. Performance improvement through structured credentialing needs to be carried out continuously to support the quality of health care facilities, both in terms of skills, knowledge, and behavior in the work environment.

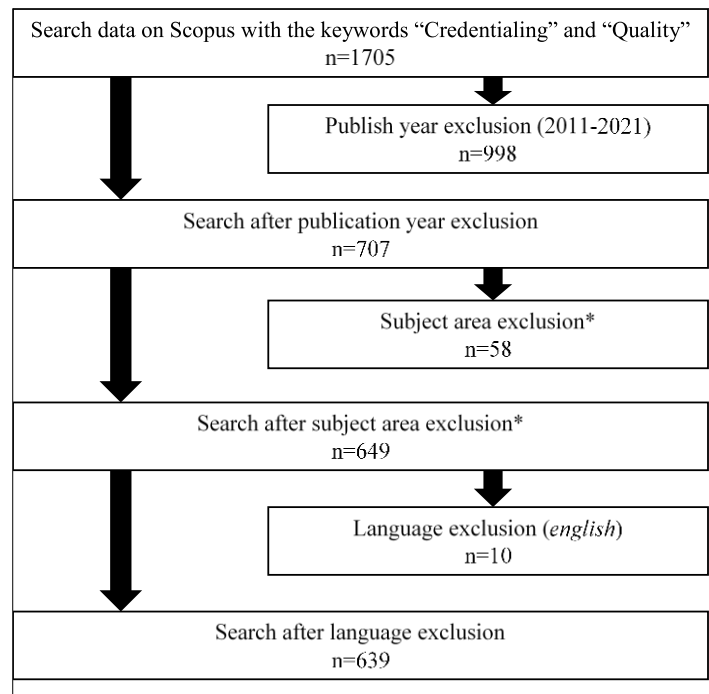
The development of health science and technology continues to grow; so vast that caregivers are required to follow the standardization that follows the times as well. Health institutions and healthcare facilities will increase and develop over time; This causes the need for caregivers to increase as well. To support the quality of the recruitment of new caregivers and the periodic standardization of the old caregivers, the credentials of caregivers are carried out which function to screen new caregivers and improve the quality of the old caregivers. Evidence-based implementation of

* Corresponding author: Adith Septyan Ikhwan

credentials to support the quality of health services needs to be reviewed further because science and technology are increasingly developing.

2. Research Method

The initial step of the research starts from collecting research articles in the Scopus Database that match the keywords "Credentialing" and "Quality" (n=1705). The second step is to limit the search for publications by year, i.e., from 2011 to 2021 (n=707). The third step is to limit the search for publications based on the research subject area, namely *medicine, nursing, health profession, psychology, pharmacy, toxicology and pharmaceuticals, and dentistry* (n=649). The last step is to limit the search based on the publication language, namely English (n=639). After the last step of the search, the data is analyzed using VOSviewer software to see network patterns or distribution of themes, years, and authorship of all publications used.



*Subject areas: medicine, nursing, health profession, psychology, pharmacy, toxicology and pharmaceuticals, and dentistry

Figure 1 Publication Selection Scheme

2.1. Research Strategy

(TITLE-ABS-KEY (credentialing) AND TITLE-ABS-KEY (quality)) AND PUBYEAR > 2010 AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SUBJAREA , "MEDI") OR LIMIT-TO (SUBJAREA , "NURS") OR LIMIT-TO (SUBJAREA , "HEAL") OR LIMIT-TO (SUBJAREA , "PSYC") OR LIMIT-TO (SUBJAREA , "PHAR") OR LIMIT-TO (SUBJAREA , "DENT"))

3. Results

Figure 2 shows the pattern of the number of scientific publications per year. Highest number of publications found in 2011 (76). In Table 1, it can be seen that the most citations in 2011 discussed about the standardization of disease diagnostics and policies on increasing the effectiveness of treatment in healthcare. Lowest number of publications found in 2019 (41). The most citations in 2019 discussed, among others, the standardization of esophagectomy for esophageal cancer and barriers in telepsychiatry.

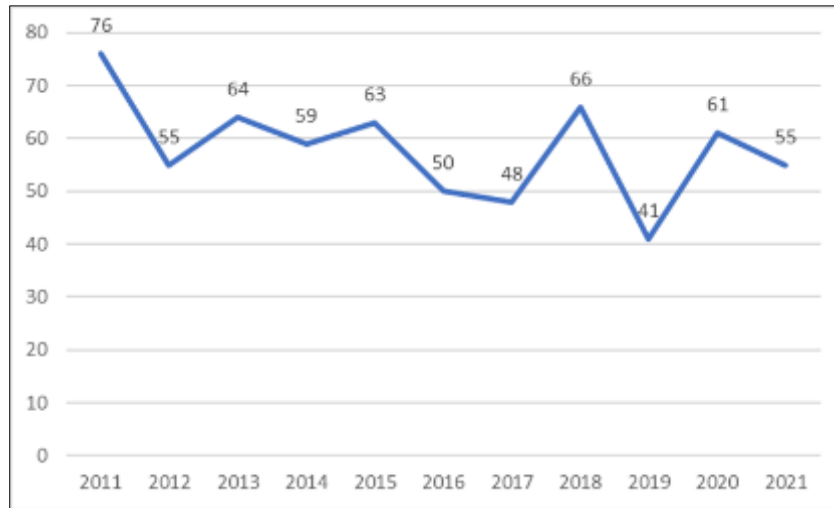


Figure 2 Number of publications by year

Table 1 Number of Citations by 2011 and 2019

Document	Year	First Author	Citations
Steps to standardization and validation of hippocampal volumetry as a biomarker in clinical trials and diagnostic criterion for Alzheimer's disease	2011	C. Jack [14]	144
A policy-oriented review of strategies for improving the outcomes of services for substance use disorder patients		K. Humphreys [15]	52
Hybrid minimally invasive esophagectomy for esophageal cancer	2019	C. Mariette [16]	235
Barriers to Use of Telepsychiatry: Clinicians as Gatekeepers		K. Cowan [17]	80

Figure 3 shows the subject areas studied in the 639 publications used in this study. The highest subject area are medicine (492), nursing (156), and health professions (56). The three subject areas also have high citation rates (medicine, nursing, and health profession) among others, in the study [16, 14, 18, 19] as shown in Table 2. The subject area with the lowest number of them are mathematics (1), environmental science (2), dentistry (2), engineering (4), business-management-and-accounting (4), and agricultural-biological science (5).

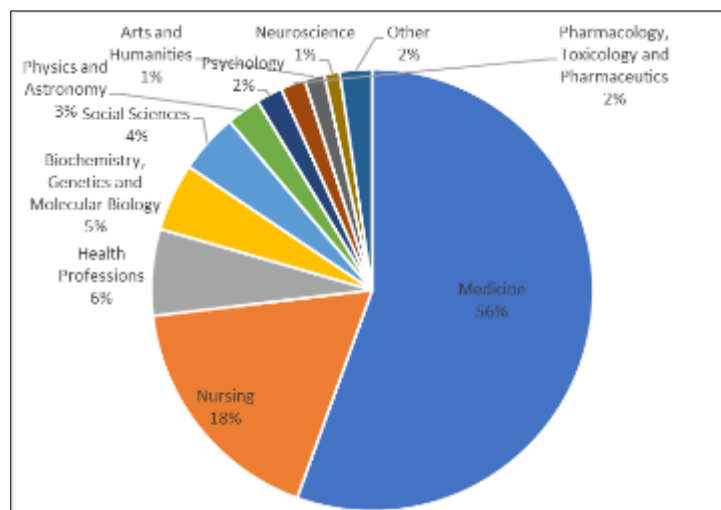


Figure 3 Number of publications by subject area

Table 2 Citation of publications by subject area

Title	Author and Year	Source	Subject Area	Citations
Hybrid minimally invasive esophagectomy for esophageal cancer	Mariette et al., 2019 [16]	New England Journal of <i>Medicine</i> 380(2), pp. 152-162	<i>Medicine</i>	235
Steps to standardization and validation of hippocampal volumetry as a biomarker in clinical trials and diagnostic criterion for Alzheimer's disease	Jack et al., 2011 [14]	Alzheimer's and Dementia 7(4), pp. 474-485.e4		144
Telemedicine quality and outcomes in stroke: A scientific statement for healthcare professionals from the American Heart Association/American Stroke Association	Wechsler et al., 2017 [18]	Stroke 48(1), pp. e3-e25		126
Changes in patient and nurse outcomes associated with magnet hospital recognition	Kutney-Lee et al., 2015 [19]	Medical Care 53(6), pp. 550-557		105
Hybrid minimally invasive esophagectomy for esophageal cancer	Mariette et al., 2019 [16]	New England Journal of <i>Medicine</i> 380(2), pp. 152-162	<i>Nursing</i>	235
Steps to standardization and validation of hippocampal volumetry as a biomarker in clinical trials and diagnostic criterion for Alzheimer's disease	Jack et al., 2011 [14]	Alzheimer's and Dementia 7(4), pp. 474-485.e4		144
Telemedicine quality and outcomes in stroke: A scientific statement for healthcare professionals from the American Heart Association/American Stroke Association	Wechsler et al., 2017 [18]	Stroke 48(1), pp. e3-e25		126
Changes in patient and nurse outcomes associated with magnet hospital recognition	Kutney-Lee et al., 2015 [19]	Medical Care 53(6), pp. 550-557		105
Hybrid minimally invasive esophagectomy for esophageal cancer	Mariette et al., 2019 [16]	New England Journal of <i>Medicine</i> 380(2), pp. 152-162	<i>Health profession</i>	235
Steps to standardization and validation of hippocampal volumetry as a biomarker in clinical trials and diagnostic criterion for Alzheimer's disease	Jack et al., 2011 [14]	Alzheimer's and Dementia 7(4), pp. 474-485.e4		144
Telemedicine quality and outcomes in stroke: A scientific statement for healthcare professionals from the American Heart Association/American Stroke Association	Wechsler et al., 2017 [18]	Stroke 48(1), pp. e3-e25		126
Changes in patient and nurse outcomes associated with magnet hospital recognition	Kutney-Lee et al., 2015 [19]	Medical Care 53(6), pp. 550-557		105
Credentialing results from IMRT irradiations of an anthropomorphic head and neck phantom	Molineu et al., 2013 [20]	Medical Physics 40(2)	<i>Biochemistry, genetics, and</i>	97

Institutional patient-specific IMRT QA does not predict unacceptable plan delivery	Kry et al., 2014 [21]	International Journal of Radiation Oncology Biology Physics 90(5), pp. 1195-1201	<i>molecular biology</i>	71
First clinical implementation of real-time, real anatomy tracking and radiation beam control	Green et al., 2018 [22]	Medical Physics 45(8), pp. 3728-3740		61
Redesigning radiotherapy quality assurance: Opportunities to develop an efficient, evidence-based system to support clinical trials - Report of the National Cancer Institute work group on radiotherapy quality assurance	Bekelman et al., 2012 [23]	International Journal of Radiation Oncology Biology Physics 83(3), pp. 782-790		48

Using VOSviewer, data analysis of themes (Figure 8) and year of publication (Figure 9) was performed. After the data was analyzed, a total of 4 clusters were obtained that mapped the topic of Credentialing and Quality in the health sector. The number, theme, and color of the 4 clusters are distinguished using network visualization from VOSviewer. Of the total themes, the entire cluster (307) is composed of cluster 1 (116), cluster 2 (81), cluster 3 (78), and cluster 4 (32). Table 3 describes the cluster themes.

Table 3 Publication Theme Cluster

Cluster	Theme	Number in % (n=307)
Cluster 1	education, nurse, patient outcome, patient satisfaction, magnet hospital, magnet recognition, healthcare professional, healthcare system, healthcare organization, professional development, quality improvement, quality measure, dan core competency	37.7% (116)
Cluster 2	competency assessment, clinical outcome, ongoing professional practice evaluation, quality control, quality indicator, proficiency, privileging, dan hospital privilege	26.3% (81)
Cluster 3	accuracy, combination, comparison, compliance, consistency, corelation, credentialing criterium, credentialing process, criterium, efficiency, feasibility, measurement, dan institusi	25.4% (78)
Cluster 4	bedside, boardroom, licensure, commitment, career, integration, knowledge, experience, clinical preparation, professional journey, professional path, dan quality care	10.4% (32)

Cluster 1 themes includes education, nurse, patient outcome, patient satisfaction, magnet hospital, magnet recognition, healthcare professional, healthcare system, healthcare organization, professional development, quality improvement, quality measure, and core competency. Cluster 2 themes includes competency assessment, clinical outcome, ongoing professional practice evaluation, quality control, quality indicator, proficiency, privileging, and hospital privilege. Cluster 3 themes includes accuracy, combination, comparison, compliance, consistency, corelation, credentialing criterium, credentialing process, criterium, efficiency, feasibility, measurement, and institution. Cluster 4 themes includes bedside, boardroom, licensure, commitment, career, integration, knowledge, experience, clinical preparation, professional journey, professional path, and quality care.

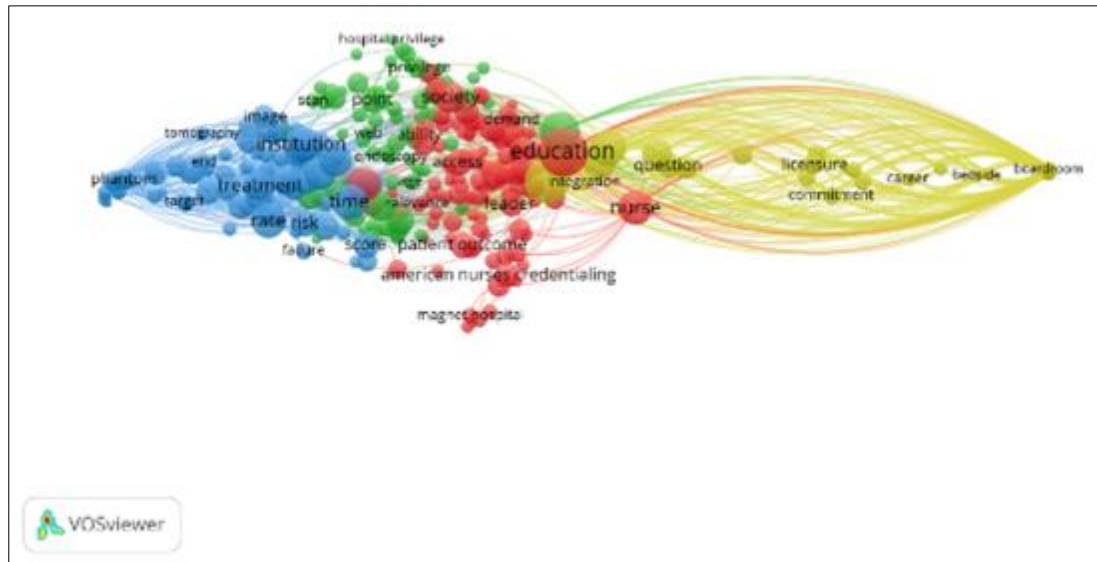


Figure 4 VOS viewer Network Visualization

Figure 9 shows a visualization of the publication themes used by year. Publication themes that tend to be new are the theme of boardroom, bedside, quality care, experienced doctor, board area, professional path, professional journey, nursing practitioner, clinical preparation, reflection, and legal scope. The themes that have been published for a long time include patient outcome, guidance, magnet hospital, ability, quality measure, profession, and direction.

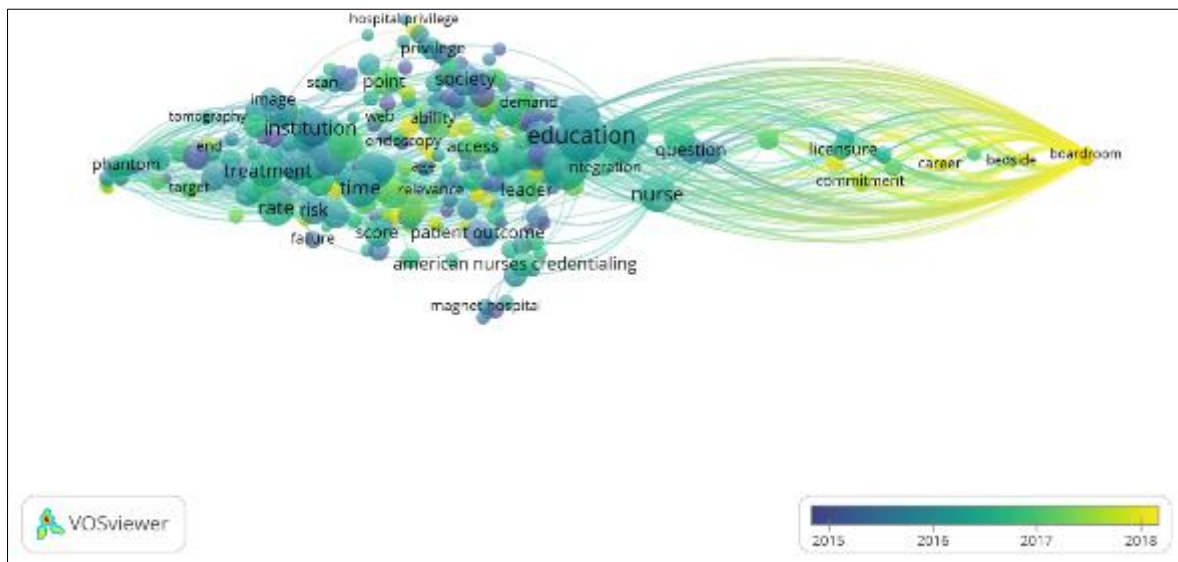


Figure 5 VOS viewer Overlay Visualization

Figure 10 is a Density Visualization of all publications containing the core themes frequently found in the 639 publications. The results of the analysis show that themes such as education, institution, treatment, time, rate risk, integration, score, and society are often found in the total publications used. The themes that tend to be rarely raised in the publications used are career, hospital privilege, failure, magnet hospital, commitment, license, and boardroom.

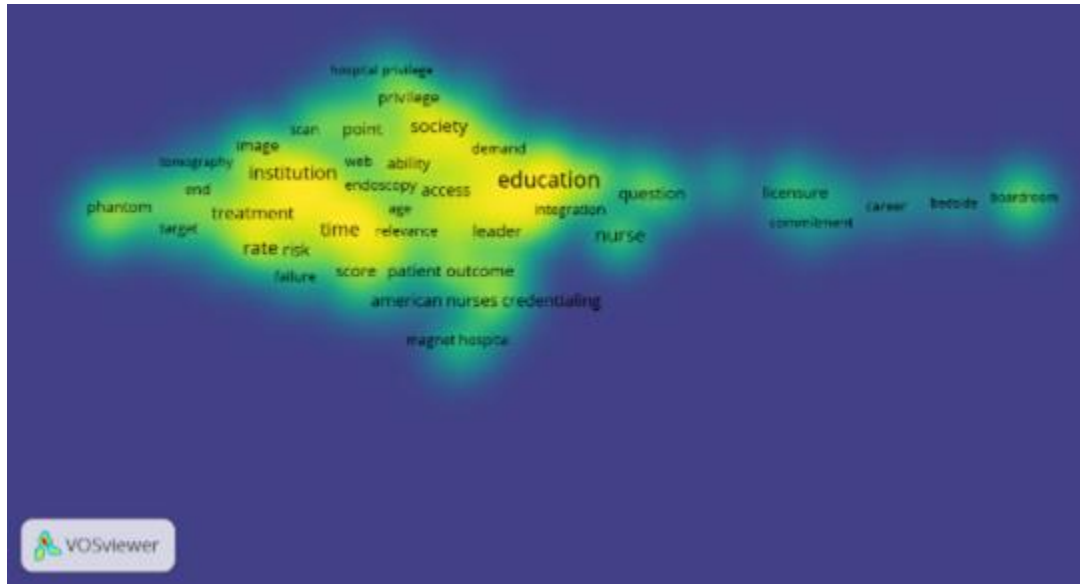


Figure 6 VOS viewer Density Visualization

Table 4 groups the publications from the highest number of citations related to the topics mapped by Figure 8 above, namely *education*, *institution*, *treatment*, *time*, *rate risk*, *integration*, *score*, and *society*. Publications with the highest citations includes about minimally invasive hybrid esophagectomy in esophageal cancer [16], steps for standardizing and validating biomarkers on Alzheimer's diagnostic criteria [14], and quality and outcome of telemedicine in stroke [18].

Table 4 Publications with the highest number of citations

Title	Author and Year	Source	Citations
Hybrid minimally invasive esophagectomy for esophageal cancer	Mariette et al., 2019[16]	New England Journal of Medicine 380(2), pp. 152-162	235
Steps to standardization and validation of hippocampal volumetry as a biomarker in clinical trials and diagnostic criterion for Alzheimer's disease	Jack et al., 2011 [14]	Alzheimer's and Dementia 7(4), pp. 474-485.e4	144
Telemedicine quality and outcomes in stroke: A scientific statement for healthcare professionals from the American Heart Association/American Stroke Association	Wechsler et al., 2017 [18]	Stroke 48(1), pp. e3-e25	126
Changes in patient and nurse outcomes associated with magnet hospital recognition	Kutney-Lee et al., 2015 [19]	Medical Care 53(6), pp. 550-557	105
Credentialing results from IMRT irradiations of an anthropomorphic head and neck phantom	Molineu et al., 2013 [20]	Medical Physics 40(2)	97
Barriers to telemedicine: Survey of current users in acute care units	Rogove et al., 2012 [24]	Telemedicine and e-Health 18(1), pp. 48-53	94
A phase III trial to investigate the timing of radiotherapy for prostate cancer with high-risk features: Background and rationale of the Radiotherapy - Adjuvant Versus Early Salvage (RAVES) trial	Pearse et al., 2014 [25]	BJU International 113(SUPPL. 2), pp. 7-12	90

4. Discussion

Throughout cluster themes assessed from 2011 to 2021, we found several major discussions found in the publications. Caregiver hold the key to delivering quality and uniform medical treatment [26]. To achieve and maintain these qualities, a standardization of equalization measures is needed; as found in robotic laparoscopic procedures [27], adaptive radiotherapy in bladder cancer [28], cardiac electrophysiology unit [29], and transcatheter aortic valve surgery [30]. In addition to providing quality services, standardization is useful for ensuring patient safety when the procedure is in progress, especially when the action in question is still new [31]. With standardized actions, costs can also be reduced [32]. This diversity of actions, along with security risks and complexity, is what supports health facilities to frequently perform credentialing.

In one study, it was found that a multidisciplinary credentialing team was formed, which not only had the task of evaluation, training, and discussion but also acted as a development team that acts as a help desk. providing feedback from forums and questionnaires given to trainees over a period of time [28]. For this reason, ideally, a health care facility should hold credentialing activities based on local guidelines that encourage international guidelines [33], because each action has different security and infection risks. Training and assessment should be carried out regularly to reduce skills decay [26]. The credentialing team should also regularly go out into the field to view and update the credentialing standards, as each country's needs and resources are different [34]. These efforts are made to maintain the quality and safety of actions in an atmosphere of dynamic scientific development.

5. Conclusion

Credentialing is currently carried out in all professional fields in order to increase the success and final results of an action, such as radiological photo procedures and results, and operating procedures in health care facilities. In addition to ensuring quality and security, credentialing can lower usage costs. Discussions between professions in health services can correct deficiencies and strengthen the potential of resources in health facilities. The use of the credentialing process in legal and ethical aspects also deserves attention as one of the efforts of health facilities to follow policies in an area. Future reviews with similar approach are needed to further expand new ideas to improve healthcare service quality

Compliance with ethical standards

Acknowledgements

This research has received no external funding.

Disclosure of conflict of interest

We have no conflicts of interest to disclose.

References

- [1] Fischer CP, Hu QL, Wescott AB, Maggard-Gibbons M, Hoyt DB, Ko CY. Evidence Review for the American College of Surgeons Quality Verification Part II: Processes for Reliable Quality Improvement. *J Am Coll Surg.* 2021;233(2):294-311.e1. doi:10.1016/j.jamcollsurg.2021.03.028
- [2] Harolds JA. Quality and Safety in Healthcare, Part LXXII: Credentialing and Privileging. *Clin Nucl Med.* 2021;46(11):908-910. doi:10.1097/RLU.0000000000003087
- [3] Albert NM, Bena JF, Buxbaum D, et al. Nurses' decision making in heart failure management based on heart failure certification status. *Hear Lung.* 2018;47(3):184-191. doi:10.1016/j.hrtlng.2018.03.001
- [4] de Havenon A, Sultan-Qurraie A, Hannon P, Tirschwell D. Development of regional stroke programs. *Curr Neurol Neurosci Rep.* 2015;15(5). doi:10.1007/s11910-015-0544-2
- [5] Powell AC, Long JW, Kren EM, Gupta AK, Levin DC. Evaluation of a Program for Improving Advanced Imaging Interpretation. *J Patient Saf.* 2019;15(1):69-75. doi:10.1097/PTS.0000000000000345
- [6] Hawes EM, Misita C, Burkhart JI, et al. Prescribing pharmacists in the ambulatory care setting: Experience at the University of North Carolina Medical Center. *Am J Heal Pharm.* 2016;73(18):1425-1433. doi:10.2146/ajhp150771

- [7] Pezzino NC, Marciniak MW, Smith MG, Ferreri SP. Physician-reported factors that encourage collaboration with community pharmacists. *J Am Pharm Assoc.* 2017;57(3):S279-S283.e2. doi:10.1016/j.japh.2017.02.016
- [8] Wiggins LL, Morrison S, Lutz C, O'Donnell J. Using evidence-based best practices of simulation, checklists, deliberate practice, and debriefing to develop and improve a regional anesthesia training course. *AANA J.* 2018;86(2):119-126. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045477881&partnerID=40&md5=f890d348637f26cf5682c28dac777f86>
- [9] Schneider PJ, Pedersen CA, Scheckelhoff DJ. ASHP national survey of pharmacy practice in hospital settings: Dispensing and administration-2017. *Am J Heal Pharm.* 2018;75(16):1203-1226. doi:10.2146/ajhp180151
- [10] Deutsch ES, Wiet GJ, Seidman M, Hussey HM, Malekzadeh S, Fried MP. Simulation Activity in Otolaryngology Residencies. *Otolaryngol - Head Neck Surg (United States).* 2015;153(2):193-201. doi:10.1177/0194599815584598
- [11] Lum E, Mitchell C, Coombes I. The competent prescriber: 12 core competencies for safe prescribing. *Aust Prescr.* 2013;36(1):13-16. doi:10.18773/austprescr.2013.007
- [12] Carson ME, Molineu A, Taylor PA, Followill DS, Stingo FC, Kry SF. Examining credentialing criteria and poor performance indicators for IROC Houston's anthropomorphic head and neck phantom. *Med Phys.* 2016;43(12):6491-6496. doi:10.1118/1.4967344
- [13] Eisenberg R, Kruskal J. Transforming from radiologist peer review audits to peer learning and improvement approaches. *Med Radiol.* Published online 2018:145-155. doi:10.1007/174_2017_114
- [14] Jack CR, Barkhof F, Bernstein MA, et al. Steps to standardization and validation of hippocampal volumetry as a biomarker in clinical trials and diagnostic criterion for Alzheimer's disease. *Alzheimer's Dement.* 2011;7(4):474-485.e4. doi:10.1016/j.jalz.2011.04.007
- [15] Humphreys K, Mclellan AT. A policy-oriented review of strategies for improving the outcomes of services for substance use disorder patients. *Addiction.* 2011;106(12):2058-2066. doi:10.1111/j.1360-0443.2011.03464.x
- [16] Mariette C, Markar SR, Dabakuyo-Yonli T-HS, et al. Hybrid minimally invasive esophagectomy for esophageal cancer. *N Engl J Med.* 2019;380(2):152-162. doi:10.1056/NEJMoa1805101
- [17] Cowan KE, McKean AJ, Gentry MT, Hilty DM. Barriers to Use of Telepsychiatry: Clinicians as Gatekeepers. *Mayo Clin Proc.* 2019;94(12):2510-2523. doi:10.1016/j.mayocp.2019.04.018
- [18] Wechsler LR, Demaerschalk BM, Schwamm LH, et al. Telemedicine quality and outcomes in stroke: A scientific statement for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke.* 2017;48(1):e3-e25. doi:10.1161/STR.000000000000114
- [19] Kutney-Lee A, Stimpfel AW, Sloane DM, Cimiotti JP, Quinn LW, Aiken LH. Changes in patient and nurse outcomes associated with magnet hospital recognition. *Med Care.* 2015;53(6):550-557. doi:10.1097/MLR.0000000000000355
- [20] Molineu A, Hernandez N, Nguyen T, Ibbott G, Followill D. Credentialing results from IMRT irradiations of an anthropomorphic head and neck phantom. *Med Phys.* 2013;40(2). doi:10.1118/1.4773309
- [21] Kry SF, Molineu A, Kerns JR, et al. Institutional patient-specific IMRT QA does not predict unacceptable plan delivery. *Int J Radiat Oncol Biol Phys.* 2014;90(5):1195-1201. doi:10.1016/j.ijrobp.2014.08.334
- [22] Green OL, Rankine LJ, Cai B, et al. First clinical implementation of real-time, real anatomy tracking and radiation beam control. *Med Phys.* 2018;45(8):3728-3740. doi:10.1002/mp.13002
- [23] Bekelman JE, Deye JA, Vikram B, et al. Redesigning radiotherapy quality assurance: Opportunities to develop an efficient, evidence-based system to support clinical trials - Report of the National Cancer Institute work group on radiotherapy quality assurance. *Int J Radiat Oncol Biol Phys.* 2012;83(3):782-790. doi:10.1016/j.ijrobp.2011.12.080
- [24] Rogove HJ, McArthur D, Demaerschalk BM, Vespa PM. Barriers to telemedicine: Survey of current users in acute care units. *Telemed e-Health.* 2012;18(1):48-53. doi:10.1089/tmj.2011.0071
- [25] Pearse M, Fraser-Browne C, Davis ID, et al. A phase III trial to investigate the timing of radiotherapy for prostate cancer with high-risk features: Background and rationale of the Radiotherapy - Adjuvant Versus Early Salvage (RAVES) trial. *BJU Int.* 2014;113(SUPPL. 2):7-12. doi:10.1111/bju.12623

- [26] Crocker JT, Hale CP, Vanka A, Ricotta DN, McSparron JI, Huang GC. Raising the bar for procedural competency among hospitalists. *Ann Intern Med.* 2019;170(9):654-655. doi:10.7326/M18-3007
- [27] AAGL. Guidelines for privileging for robotic-assisted gynecologic laparoscopy. *J Minim Invasive Gynecol.* 2014;21(2):157-167. doi:10.1016/j.jmig.2014.01.024
- [28] Pham D, Roxby P, Kron T, Rolfo A, Foroudi F. Introduction of online adaptive radiotherapy for bladder cancer through a multicentre clinical trial (Trans-Tasman Radiation Oncology Group 10.01): Lessons learned. *J Med Phys.* 2013;38(2):59-66. doi:10.4103/0971-6203.111308
- [29] Haines DE, Beheiry S, Akar JG, et al. Heart rhythm society expert consensus statement on electrophysiology laboratory standards: Process, protocols, equipment, personnel, and safety. *Heart Rhythm.* 2014;11(8):e9-e51. doi:10.1016/j.hrthm.2014.03.042
- [30] Bavaria JE, Tommaso CL, Brindis RG, et al. 2018 AATS/ACC/SCAI/STS expert consensus systems of care document: Operator and institutional recommendations and requirements for transcatheter aortic valve replacement: A Joint Report of the American Association for Thoracic Surgery, American College of . *Catheter Cardiovasc Interv.* 2019;93(3):E153-E184. doi:10.1002/ccd.27811
- [31] Jaffe TA, Hasday SJ, Knol M, et al. Safety considerations in learning new procedures: a survey of surgeons. *J Surg Res.* 2017;218:361-366. doi:10.1016/j.jss.2017.06.058
- [32] Tam V, Borrebach J, Dunn SA, Bellon J, Zeh HJ, Hogg ME. Proficiency-based training and credentialing can improve patient outcomes and decrease cost to a hospital system. *Am J Surg.* 2019;217(4):591-596. doi:10.1016/j.amjsurg.2018.07.053
- [33] Mitchell BG, MacBeth D, Halton K, Gardner A, Hall L. Resourcing hospital infection prevention and control units in Australia: A discussion paper. *Infect Dis Heal.* 2017;22(2):83-88. doi:10.1016/j.idh.2017.02.001
- [34] Baisch BA, Krajny S, Wagner LM, Symons CW. A Qualitative Analysis of Health Education Practice in Applied Work Settings. *Health Promot Pract.* 2016;17(6):899-906. doi:10.1177/1524839915619342