Article

Contribution of Online Referral Systems to Health Services: Systematic Review

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ABSTRACT

The online referral system (eReferral) is designed to improve waiting times and efficiency by standardizing information and online communication in the referral process. Online referral is the automation of the referral process in which appointments and other information regarding the outcome of a consultation are transferred between two or more healthcare providers. This study was designed to identify the implementation of online referrals at various levels of health care. This systematic review was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement. Of the 10 articles included in this review, 6 studies were conducted in the USA, 2 studies in Canada, and one each in the UK, and Saudi Arabia. The studies used a variety of designs, including Quasi-experimental (n=5), longitudinal (n=2), qualitative (n=1), and Research and Development (n=2). This study provides a clear picture of the use of an online referral system, starting from the work process, effectiveness, barriers, and development possibilities for a wider reach. This system is very helpful in easing the workload of specialist doctors and for patients who are referred users get the benefit of shorter waiting times/queues, making it possible to reduce medical costs further.

I. INTRODUCTION

Referrals are the link and interface between healthcare providers in primary and specialist care settings (Tzartzas et al., 2019). The referral process is defined as the transfer (including sharing) of patient care responsibilities from the referring provider to a physician or other provider, thus including the transfer of patient care back in a timely manner (Warren et al., 2011). There is a deep-rooted impression in many countries that higher levels of healthcare provide the best care. It is important to connect between levels of health services to reassure people that they will access specialized services if they really need them (WHO, 2023).

The referral process is susceptible to disruption which can result in a lack of continuity of care, delays in service delivery and dissatisfaction among practitioners and patients (Ezeonwu, 2023). According to research, 25% to 50% of referrals, do not have adequate information on the specialist and the reason for the referral (Kavosi & Siavashi, 2023).E-referrals are messages sent online such as documents or PDFs that can be received and viewed by reviewers (Naseriasl et al., 2015). Currently e-referral can be seen as a new model for the integration of primary and secondary health care, especially in developing countries (Handayani et al., 2023). Several countries such as the UK, Finland, Norway, the Netherlands, Denmark, New Zealand, Australia and the US have adopted e-referral systems with varying degrees of success (Tian, 2011; Naseriasl et al., 2015).

Timely access to specialist care or higher level health services is critical in determining better health outcomes and reducing health care costs for patients and the health system (Shi, 2012). Access to specialist or higher-level services depends on several factors such as the patient's clinical condition, the patient's age, the type and location of the referral clinic, the availability of specialists, and the level of communication and type of information, which is shared between primary care physicians and specialists in the referral process. Paper-based referral via fax, a standard process in many practices has been associated with referral and ordering delays due to incomplete or missing information regarding patient data, laboratory clinical test results, or radiology test results (Alonso et al, 2019).

Paper-based referral processes are known for features such as inadequate information, lost or misplaced paper records, medication errors due to illegible handwriting. In addition to limited standardization, a lack of capacity for iterative tracking of referrals, outcomes and communication or feedback between referral providers and specialists is another characteristic of paper-based referral systems (Ajami & Bagheri-Tadi, 2013).

Information and Communication Technology (ICT) in the health system is one solution to overcome the problem of paper form-based referrals (Aceto et al., 2023). ICT has opened up new possibilities for health care, for which ICT is seen as a possible solution in health care (Rouleau et al., 2015). Therefore, to solve the mentioned problems and meet the challenges regarding existing referrals, online referrals have been seen as one of the best solutions to replace paper-based referrals (Shephard et al., 2023).

The use of innovative health information technology in coordinating specialist care services can facilitate effective communication (Alotaibi & Federico, 2023). At the beginning, the use of health information technology systems sometimes faces several obstacles such as high initial costs, decreased workplace productivity, and technological challenges (Khalifa, 2013). However, if successful, health information technology systems can reduce disparities by enabling wider access to health services (Lee, 2015).

The online referral system (eReferral) is designed to improve waiting times and efficiency by standardizing online information and communication in the referral process (Mohammed et al, 2020). Online referral is the automation of the referral process where appointments and other information regarding the results of consultations are transferred between two or more health service providers (Liddy et al., 2015).

Research on the use of electronic reference systems has been carried out in various countries around the world. For this reason, this study was designed to identify the implementation of online referrals at various levels of health services. This study can be used as reference material for policy makers in developing countries, especially in Indonesia, to implement this online reference evenly.

II. METHODS

Design

This systematic review was carried out using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement. Through this study, we can see a picture of the implementation of online referrals for various disease conditions in several developing countries.

Search Strategy

Relevant articles were searched and collected using the Sciencedirect, Google Scholar, Cochrane Library, and Wiley online Library search engines, with a publication time range between 2010 and 2021. Search keywords were adjusted to Mesh terms for health research. Relevant studies were identified using keywords such as referral, consultation, referral system, referral model, referral project, online referral, online ordering, health system, health care, health services and medical care.

Article inclusion and exclusion criteria

The authors included studies written in English and Indonesian that focused on the development and implementation of referral systems. The authors also conducted a search through the reference lists of the included studies. Studies containing implementation, building or development of reference solutions were included in this review. Studies that focused on issues beyond the implementation, design or development of referral systems were excluded. We also excluded case reports, comments to the editor, and not full-text.

Data Extraction and Analysis

Duplicate articles are filtered using the Mendeley application. Information was extracted from each article into an extraction table in the Microsoft Office Word v program. 2010. After selecting titles to include, all authors determined which articles had an abstract review. After abstract review, the next meeting focused on determining inclusion for full-text article review. Articles selected for full review were read by the authors and then data were extracted independently using extraction tables. Data extraction and synthesis were carried out carefully. Interpretations are presented in the table by taking key parts from the article (Suhron, 2024).

III. RESULT

The search yielded 5,539 articles; after removing articles that were duplicates, 1,577 articles remained, of which 1,540 articles were excluded after title and abstract screening. Final screening resulted in 10 articles that met the inclusion criteria.

PRISMA Flow Diagram pencarian artikel
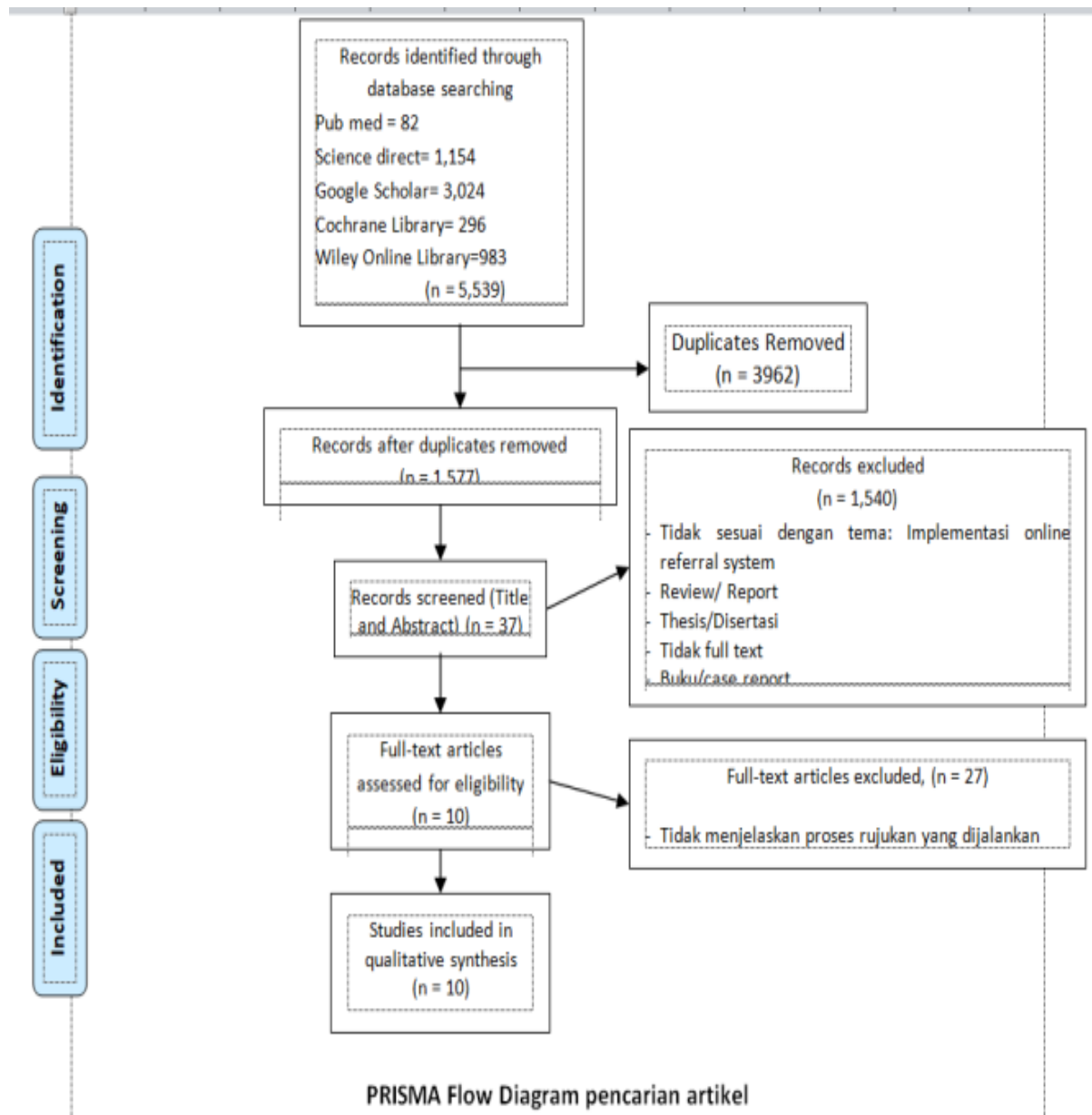
IV. DISCUSSION

Characteristics of included studies

Of the 10 articles included in this review, 6 studies were conducted in the USA, 2 studies in Canada, and one each in the UK and Saudi Arabia. Studies used a variety of designs, including Quasi-experimental (n=5), longitudinal (n=2), qualitative (n=1), and Research and Development (n=2).

Effects on the efficiency of the referral process

Through an online referral system, it is hoped that it will improve the quality of referral services because it will indirectly influence the quality of health services in general at one or more health service provider institutions. Online-based referral applications (OARS) reduce miscommunication or patient identification errors and improve communication between hospitals, which is very important in relation to improving service quality (Woodward et al., 2020). Communication misunderstandings in the referral system are usually related to the patient's clinical questions, including incomplete information provided from the institution making the referral. The use of an online-based referral system makes it easier to determine clinical questions, and reduces the proportion of inappropriate referrals (Kim-Hwang et al., 2010).

The efficiency of online referrals was reported in one study, where there was a reduction in time of less than five minutes to complete the referral process (Shephard et al., 2023). Patients who were referred for surgery also reported a decrease in the duration of waiting time from initial registration for hospital admission to scheduling for surgical procedures to begin (Jastaniah et al., 2020; Woodward et al., 2020; Mohammed et al., 2020). Shephard and team also reported that referrals were faster with the online system, with the average time from decision to refer to referral submission increasing from 2.1 hours to 1.9 hours, a statistically significant increase in time. An additional benefit of online referral systems is that patients are also reviewed more quickly by specialists (Shephard et al., 2023).

Effects on patient knowledge and awareness

There were two studies included in the review focusing on social programs regarding self-management of chronic disease sufferers, and smoking cessation programs. In programs for chronic diseases, online referrals are used to assist patients in participating in the CDSM program, the result is increased knowledge of patients and health workers about CDSM healthy living. Increased patient knowledge is the result of guidelines delivered via telephone calls and emails (Kessler et al., 2023). Meanwhile, for smoking cessation programs, online referrals are able to facilitate relationships between officers in smoking cessation programs and participants who have awareness of smoking as a result of follow-up carried out by program providers to continuously provide advice to participants (Baker et al., 2021).

Effects on outpatients

In a qualitative study reporting the results of interviews with implementers and referral recipients, where at the level of clinic efficiency, participants said that patient visits were more productive because they had previously undergone the necessary initial diagnostic tests. It is further said that this online referral system prevents patients from unnecessary referrals so that doctors will save more time. Patients will also have their treatment history recorded even if they are not scheduled to meet with the specialist doctor they need (Straus et al., 2011).

In relation to outpatients, this online referral system also provides benefits to pharmacists both on duty in hospitals and at the primary care level or independent

pharmacists, because through this system pharmacists in hospitals will carry out consideration with pharmacists outside the hospital who have been appointed. or collaborate on the treatment history of patients who have been discharged from the hospital (Martirosov et al., 2019).

First Author, Date, Title	Location	Design	Objective	Referral process	Results
Woodward et al., 2020. Development and evaluation of an electronic hospital referral system: a human factors approach.	English	R & D, Pre-post intervention	To analyze the workflow and user engagement that was the focus of the development of a new regional online referral system.	Oxford Acute Referral System (OARS). Referring physicians submit referrals via an application accessed via a web browser. Notifications are sent to a special OARS gadget held by a team of specialists, for urgent referrals a phone call can be made. Patient information on OARS includes patient demographic data, referrer name and contact details, responsible consultant, referral request and clinical details (such as examination findings, Glasgow Coma Score). Referral results decisions such as "Manage Locally" or "bring in". For patient admissions, the ward coordinator links the OARS referral with the patient record generated in the online patient record (EPR).	This system has significantly improved the reliability of recorded patient information and referring doctors, hospitals and contact details. Given the high frequency of patient transfers to specialties and frequent shift changes between physicians, this shared access to referral information translates into improved patient safety.
Kim-Hwang et al., 2010. Evaluating Electronic Referrals for Specialty Care at a Public Hospital	US	Pre – post implementation	to determine the impact of eReferrals (compared to paper-based referrals) on specialist referrals.	Referring providers fill out an online form with their contact information and the patient's contact, demographic, and clinical data from the EHR. Text fields are provided to enter the reason for consultation and related clinical information. Designated specialty reviewers (specialist physicians in medical specialties or nurse practitioners in surgical specialties) review referrals. Reviewers adjudicate each referral within 72 hours of submission and decide whether or not to schedule an appointment.	eReferral facilitates communication between referring physicians and specialist reviewers prior to an appointment. We found that with paper-based referrals, specialists had difficulty identifying clinical questions. In surgical specialties, there is a higher percentage of inappropriate referrals and the need for unnecessary follow-up. Adoption of eReferrals is associated with improvements in this regard. Differences were more pronounced for surgical areas than for medical subspecialty clinics.

				If the patient's information is complete, the next appointment will be.	
Kessler et al., 2023. An Electronic Referral Initiative to Facilitate Referral to a Chronic Disease Self-Management Program for Persons with Transient Ischemic Attack	Canada	Pre –post implementation	To test the feasibility and acceptability of an online referral system to an existing CDSM program to facilitate self-management support for people with TIA.	Nurses complete an eReferral form for patients who agree to be connected to the CDSM program. Once the eReferral form is submitted, automatic notification is provided to CDSM staff. CDSM staff make calls to patients to provide further information about program content and workshop options and assist patients with registering for upcoming workshops. Patients are placed on a waiting list if the current program is far from the patient's location.	The eReferral system is feasible to be implemented in stroke prevention clinics. Additionally, the program is available at no cost and is available online and at various locations in the region, minimizing some of the barriers to enrollment.
Baker et al., 2021. Closed-Loop Electronic Referral From Primary Care Clinics to a State Tobacco Cessation Quitline : Effects Using Real-World Implementation Training	US	Pre – post implementation	To test the successful implementation of an implemented healthcare system, an EHR-based, interoperable, and closed-loop eReferral mechanism for smoking care in primary care.	Roomers (nurses) collect patient smoking status data via EHR. The recorded patients are then entered into the WTQL online referral program. Next, the patient will receive a notification in the form of an offer to take part in the WTQL smoking cessation program	WTQL service coverage increased after the implementation of eReferral, and was fairly even across all patient characteristics available for analysis. The highest coverage was among African American patients and Medicaid recipients.
Shephard et al., 2023. E-referrals: improving the routine interspecialty inpatient referral system	US	R & D	To improve patient safety and efficiency of junior doctors in the referral process.		Online referrals are more efficient both in terms of the time needed to make a referral and also for patient review. The increased efficiency of junior doctors and the possible reduction in length of stay for patients should have an associated cost reduction for the trust.
Ray et al., 2023. Impact of Implementation of Electronically-Transmitted Referrals on Pediatric	US	Pre – post implementation	To monitor the impact of implementing electronically-transmitted	First, EMR referrals were redesigned to be sent online to CHP specialists. Second, for referrals submitted online to CHP, the scheduler then	Analysis showed a gradual increase in subspecialty visits attended after referral with the implementation of online transmitted referrals between academic children's hospitals and affiliated PCP practices.

Subspecialty Visit Attendance			referrals by assessing referral processes and outcomes before and after implementation.	calls the family to understand the need for the referral, decide to schedule the referral, and navigate how to call). Third, to improve the PCP's ability to track referrals, the subspecialty scheduler sends online notifications to the PCP regarding the final scheduling outcome: scheduled appointment, scheduled family, or rejected family.	
Jastaniah et al., 2020. Improving access to care for c hildren with cancer through implementation of an electronic referral system (IMPACT): A single-center experience from Saudi Arabia	Saudi Arabia	A r etrospect ive cross-sectional study	To assess the impact of e-RS implementation on timely access to cancer care.		e-RS resulted in faster processing of pediatric patients for cancer treatment and fewer patient deaths during initial evaluation and treatment during that time period.
Straus et al., 2011. Implementation of an Electronic Referral System for Outpatient Specialty Care	US	Qualitativ e	To test the implementation of an online referral system (eReferral) that creates direct communication between primary care providers and specialist reviewers.	The provider submits a referral request to the desired specialty service from within the HER. Some specialties have screening questions designed to direct referring providers to the correct clinic, and all specialties have policy pages with information such as requirements for submitting a referral (e.g., completion of certain pre-visit screenings). Providers then enter clinical consultative questions in free text format. Relevant patient and provider information is automatically added from HER, and complete referrals are sent to the dedicated services online queue. Each specialty service has a designated clinician	Users perceived that eReferral largely prevented low-value specialty visits from occurring due to unclear consultation questions, incomplete examinations, and referrals for problems that could be managed in primary care. The system is also credited with significantly reducing wait times for specialty services, which have historically reached one year for some specialties in resource settings.

				(physician or NP) who reviews and responds to each referral request. Specialist reviewers can use the eReferral system to communicate with referral providers to resolve patient concerns, with or without an appointment.	
Martirosov et al., 2019. Pharmacist implementation of transitions of care electronic referral process to provide hand-off between inpatient and outpatient settings.	US	Retrospective study	To describe the implementation of an online transition of the care referral process within a large academic medical center.	Starting off, each ambulatory care clinic develops their own referral criteria, which focus on common treatment-related needs that align with the patient population outlined in their collaborative practice agreement. The pharmacy department then partners with the information technology department to create an online TOC referral order within the EMR. An online order is created so that the sender must select the specific clinic where the patient will follow up after discharge, the referral criteria the patient meets, and any additional reasons for handover.	Online referral from the inpatient pharmacist to the ambulatory care pharmacist provides pharmacist-to-pharmacist handover for medication-related needs after discharge.
Mohammed et al., 2020. The impact of integrating electronic referral within a musculoskeletal model of care on wait time to receive orthopedic care in Ontario.	Canada	Descriptive study	The research aims to a) assess the processing time for orthopedic referrals at central intake (CI) to be forwarded to RAC, b) assess the waiting time (wait 1a) for orthopedic referrals processed via the eReferral system to receive an initial		eReferral can result in a faster referral process and shorter wait times for patients, which increases patient satisfaction with the referral process.

			assessment at the RAC. C) compare RAC's ability to meet assessment lead time targets (four weeks) with referral methods (eReferrals vs. fax). d) evaluate patient satisfaction with the length of time they wait to receive care at a RAC with eReferral.		

V. CONCLUSION

This review shows that study designs, settings, and measurements vary widely which limits the generalizability of existing findings. Most studies carry out evaluations through the use of surveys or questionnaires. The lack of standardized study designs necessitates the need for standardized methodologies and frameworks for evaluating eReferral systems across healthcare.

The evidence presented in this review collectively shows that eReferral systems have the potential to increase the quantity and quality of referrals as well as high levels of satisfaction by physicians in a variety of service situations. Studies show that since the implementation of eReferrals, the number of referrals has increased, and also allows for cost savings for the system, reduction of unnecessary referrals or follow-ups, providing better consultation ideas as well as good perceptions of doctors in terms of quality and accessibility. The results of this study also show that the online referral system can reduce missing or incomplete information in the referral process, avoiding repeated communications between doctors which can result in increased waiting times in follow-up consultations, and less time to process referrals from service providers. A major strength of this systematic review is the ten studies reviewed, evaluating eReferral systems in a variety of service situations.

A positive relationship was found between intervention and efficiency. A reduction in the number of phone calls and call repetitions, can translate into a reduced workload for the operator team and fewer interruptions for the on-call doctor. A reduction in repeat calls regarding the same patient could be an effect of very comprehensive referral information. Overall, referrals still require the same clinical judgment and decisions, but the systems in place today provide visibility and continuity of the process. Specialist consultants can gain earlier access to referral details, hospital bed managers can anticipate and plan for future patient arrivals (Kim-hwang et al., 2010; Woodward et al., 2020).

Implementation of an online referral system in the pediatric area demonstrated a gradual increase in subspecialty visits attended after referral with the implementation of referrals transmitted online between academic children's hospitals and affiliated physician practices. Evaluation results indicate improvements, as well as ongoing barriers, in pediatric subspecialty care. Based on these results, it is recommended to increase effectiveness, adoption, and increase the reach of referrals transmitted online (Ray et al., 2023).

Online referral also provides a standardized handover process and targets treatment activities that are supported by the pharmacy/pharmacist's scope of practice for outpatients. The referral sequence may be modified to include other referral criteria as the patient-pharmacist population in ambulatory care grows or direct patient care activities change. Additionally, e-referral provides an easy way to query medical treatment history data. This allows pharmaceutical units to analyze workflows and determine opportunities for quality improvement and service growth. Querying this data also allows us to determine who is responsible for booking referrals. In one study, pharmacy trainees played a role in identifying and referring patients to ambulatory care pharmacists, demonstrating how trainees can support care transition activities across the health system while learning about continuity of patient care (Martirosov et al., 2019).

There are several limitations associated with our reviews. First, due to the small number of evaluations of eReferral systems, we can only describe the main results and findings of each study rather than conducting a more conclusive meta-analysis,

regression analysis, or related quantitative methods to evaluate the overall effect of eReferral systems in quality, quantity, efficiency, and cost effectiveness. Although we took a very systematic approach in searching published literature, we did not track the number of websites and documents we reviewed for inclusion/exclusion. Similar to the published literature, while we identified many potential documents, they were not related to e-referrals. However, as with any literature search, it is possible that some studies were not captured in this review. Another limitation is that e-consultation and eReferral systems are described using similar terms, which makes it more difficult to identify and describe evidence for eReferral systems alone.

Despite these limitations, the results of this scoping review suggest that further research is needed to understand the effectiveness of eReferral systems in healthcare. Further economic analysis is needed to determine whether initial capital and training costs are justified by health system efficiency and benefits after implementation, and how referral volume affects cost recovery. Additionally, cost analysis of online referral systems can also inform future cost-effectiveness or cost-benefit analysis. Nevertheless to better inform decision making, comparative analyzes based on robust study designs (e.g., randomized controlled trials) are also needed to determine the effectiveness or cost-effectiveness of eReferral systems compared to self-referral systems and complete e-consultation systems in settings where more than one solution can be implemented.

This study provides a clear picture regarding the use of online referral systems, starting from the work process, effectiveness, obstacles, and possibilities for development for a wider reach. This system really helps lighten the workload of specialist doctors and patients who use referrals get benefits in the form of shorter waiting/queue times, making it possible to further reduce treatment costs.
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REFERENCES

1. Aceto, Giuseppe & Persico, Valerio & Pescapè, Antonio. (2023). The role of Information and Communication Technologies in Healthcare: Taxonomies, Perspectives, and Challenges. Journal of Network and Computer Applications. 107. 10.1016/j.jnca.2023.02.008.

2. Ajami , S. , & Bagheri-Tadi , T. (2013). Barriers to Adoption of Electronic Health Records (EHRs) by Physicians. Acta medical informatica medica : AIM : journal of the Society for Medical Informatics of Bosnia & Herzegovina : case studies of medical informatics in BiH, 21(2), 129–134. https://doi.org/10.5455/aim.2013.21.129-134

3. Alotaibi, Y. K., & Federico, F. (2023). The impact of health information technology on patient safety. Saudi medical journal, 38(12), 1173–1180. https://doi.org/10.15537/smj.2023.12.20631

4. Azamar-Alonso, A., Costa, A. P., Huebner, L. A., & Tarride, J. E. (2019). Electronic referral systems in health care: a scoping review. ClinicoEconomics and outcomes research : CEOR, 11, 325–333. https://doi.org/10.2147/CEOR.S195597

5. Dorothy Kessler, Amir K. Afkham, Alin e Bourgoin, Sophia Gocan, Brammiya Si vakumar, Mar y E. Windsor, Clare Liddy. 2023. An Electronic Referral Initiative to Facilitate Referral to a Chronic Disease Self-Management Program for Persons with Transient Ischemic Attack. https://doi.org/10 .1055/s -0037-1608647

6. Ezeonwu M. C. (2023). Specialty-care access for community health clinic patients: processes and barriers. Journal of multidisciplinary healthcare, 11, 109–119. https://doi.org/10.2147/JMDH.S152594

7. Jastaniah W, Justinia T, Alsaywid B, Alloqmani RM, Alloqmani SM, Alnakhli AT, Alganawi A. Improving access to care for children with cancer through implementation of an electronic referral system (IMPACT): A single-center experience from Saudi Arabia. Pediatr Blood Cancer. 2020 Oct;67(10):e28406. doi: 10.1002/pbc.28406. Epub 2020 Jul 22. PMID: 32697039.

8. Judy E. Kim-Hwang, Alice Hm Chen, Douglas S. Bell, David Guzman, Hal F. Yee, Jr., and Margot B. Kushel. 2010. Evaluating Electronic Referrals for Specialty Care at a Public Hospital. J Gen Intern Med 25(10):1123 –8. DOI: 10.1007/s11606-010-1402-1

9. Kristin N. Ray, Michael Drnach, Ateev Mehrotra, Srinivasan Suresh, Steven G. Docimo, Impact of Implementation of Electronically-Transmitted Referrals on Pediatric Subspecialty Visit Attendance, Academic Pediatrics (2023), https://doi.org/10.1016/j.acap.2023.12.008

10. Lee, J. The impact of health information technology on disparity of process of care. Int J Equity Health 14, 34 (2015). https://doi.org/10.1186/s12939-015-0161-3

11. Liddy, Clare & Hogel, Matthew & Blazkho, Valerie & Keely, Erin. (2015). The current state of electronic consultation and electronic referral systems in Canada: An environmental scan. Studies in health technology and informatics. 209. 75-83. 10.3233/978-1-61499-505-0-75.

12. M. Khalifa. 2013. Barriers to Health Information Systems and Electronic Medical Records Implementation. Procedia Computer Science. 21 (2013) 335 – 342. doi: 10.1016/j.procs.2013.09.044

13. Martirosov AL, Seitllari K, Kaurala S, MacDonald N. Pharmacist implementation of a transitions of care electronic referral process to provide hand-off between inpatient and outpatient settings. J Am Pharm Assoc (2003). 2020 Jan-Feb;60(1):112-116.e1. doi: 10.1016/j.japh.2019.09.010. Epub 2019 Nov 2. PMID: 31690512.

14. Matthew Woodward, Nicholas De Pennington, Carly Grandidge, Peter McCulloch & Lauren Morgan (2020): Development and evaluation of an electronic hospital referral system: a human factors approach, Ergonomics, DOI: 10.1080/00140139.2020.1748232

15. Mohammed HT,Payson L-A, Alarakhia M (2020) The impact of integrating electronic referral within a musculoskeletal modelof care on wait time to receive orthopediccare in Ontario.PLoS ONE 15(11): e0241624. https://doi.org/10.1371/journal.pone.0241624

16. Naseriasl, M., Adham, D., & Janati, A. (2015). E-referral Solutions: Successful Experiences, Key Features and Challenges- a Systematic Review. Materia socio-medica, 27(3), 195–199. https://doi.org/10.5455/msm.2015.27.195-199

17. Putu Wuri Handayani, Ibad Rahadian Saladdin, Ave Adriana Pinem, Fatimah Azzahro, Achmad Nizar Hidayanto, Dumilah Ayuningtyas, Health referral system user acceptance model in Indonesia. Heliyon, Volume 4, Issue 12. 2023. e01048, ISSN 2405-8440, https://doi.org/10.1016/j.heliyon.2023.e01048.

18. Rouleau, G., Gagnon, M. P., & Côté, J. (2015). Impacts of information and communication technologies on nursing care: an overview of systematic reviews (protocol). Systematic reviews, 4, 75. https://doi.org/10.1186/s13643-015-0062-y

19. Shephard E, Stockdale C, May F, et al. E-referrals: improving the routine interspecialty inpatient referral system. BMJ Open Quality 2023;7:e000249. doi:10.1136/bmjoq-2023-000249

20. Shi L. (2012). The impact of primary care: a focused review. Scientifica, 2012, 432892. https://doi.org/10.6064/2012/432892

21. Straus SG, Chen AH, Yee H Jr, Kushel MB, Bell DS. Implementation of an electronic referral system for outpatient specialty care. AMIA Annu Symp Proc. 2011;2011:1337-46. Epub 2011 Oct 22. PMID: 22195195; PMCID: PMC3243286.

22. Suhron, M. 2024. Public Health Epidemiology Research Book. SABDA EDU PRESS.

23. Tian, L.. (2011). Improving knowledge management between primary and secondary healthcare: An e-referral project. Health Care and Informatics Review Online. 15. 31-37.

24. Timothy B. Baker et al. 2021. Closed-Loop Electronic Referral From Primary Care Clinics to a State Tobacco Cessation Quitline: Effects Using Real-World Implementation Training. Am J Prev Med 2021;60(3S2):S113− S122. https://doi.org/10.1016/j.amepre.2019.12.026

25. Tzartzas, Konstantinos & Oberhauser, Pierre-Nicolas & Marion-Veyron, Régis & Bourquin, Céline & Senn, Nicolas & Stiefel, Friedrich. (2019). General practitioners referring patients to specialists in tertiary healthcare: A qualitative study. BMC Family Practice. 20. 10.1186/s12875-019-1053-1.

26. Warren J, White S, Day KJ, Gu Y, Pollock M. Introduction of electronic referral from community associated with more timely review by secondary services. Applied Clinical Informatics. 2011; 2(4): 5 4 6 -56 4.

27. WHO. (2023). Delivering quality health services: a global imperative for universal health coverage. Geneva: World Health Organization, Organisation for Economic Co-operation and Development, and The World Bank; 2023. Licence: CC BY-NC-SA 3.0 IGO.