

Improving the Quality of Healthcare through a Multidisciplinary Team Approach to Nursing Research

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Submitted: 29 Aug 2020; Accepted: 06 Sept 2020; Published: 14 Sept 2020

Abstract

Continual advances in medicine mean that health professionals must remain well-informed in order to provide high-quality patient care. Multidisciplinary teams are crucial in this context, as research shows that this collaborative approach facilitates holistic treatment.

Moreover, local medical research enhances the quality and safety of care by producing relevant knowledge and insights. Therefore, hospitals should promote research by healthcare teams.

This article presents the experience of a research unit made up of healthcare professionals from diverse disciplines. The efforts of this team have had a positive impact on clinical care for pediatric oncology patients and their families. We hope that these findings will encourage other nursing professionals to develop multidisciplinary research teams in hospitals.

Keywords: Nursing research, teamwork, pediatric oncology, quality of healthcare

Introduction

Medical advances have accelerated in recent decades, compelling medical professionals to continually find ways to improve the quality of patient care. Multidisciplinary healthcare teams are crucial for optimizing treatment and ensuring holistic patient care [1-3]. Studies by local medical professionals also enhance the quality and safety of care by producing relevant knowledge and insights. Hospitals, therefore, should promote research by healthcare teams to identify local or even facility-specific factors that affect health outcomes, which may not be found in the international literature. Seeking a better understanding of local conditions in order to develop and adopt

specialized strategies can contribute to improving healthcare and quality of life for the population.

Nurses often participate in hospital-based research teams, performing tasks such as designing research projects as a primary or co-investigator, seeking approval from the corresponding ethics committees, recruiting participants, obtaining informed consent, collecting and storing biological samples, developing safety and adverse events protocols, gathering and tabulating data, performing descriptive data analyses, and drafting scientific manuscripts [4-5].

The objective of this article is to present the experience of a research unit made up of healthcare professionals from diverse disciplines, including nurses. The efforts of this team have

produced findings that have advanced clinical care for children and adolescents with cancer and their families. We hope that this experience will motivate other pediatric oncology nurses to develop collaborative research teams in their hospitals.

Description of process

Each year, 400–500 children in Chile are diagnosed with cancer, 80% of whom receive care in the public system through the national pediatric cancer program (PINDA). This program standardizes treatment protocols and has improved global survival to roughly 78%. The public system includes 11 comprehensive pediatric cancer centers and 9 support centers in various hospitals throughout the country. Hospital Dr. Luis Calvo Mackenna (HLCM) is the largest pediatric hospital in Chile and is also among the largest-capacity comprehensive cancer care centers nationally, treating 100–150 new cases each year [6].

The Integrated Clinical Research Unit was established at HLCM in 1997 by the University of Chile, the oldest and one of the most prestigious higher education institutions in Latin America. The goal of the unit is to promote, facilitate, and support research at the hospital in various areas of pediatrics, linking human resources with the materials necessary to seek solutions for problems associated with childhood disease. The research team began to incorporate nursing professionals in 2009. The main role of nurses at that time was to coordinate and execute clinical trials involving children with cancer. These trials were typically led by physicians and funded by the national government [7, 8].

During the course of such trials, the staff observed that parents often lacked knowledge regarding the diagnosis, treatment, and complications of their child's disease. At this time, there was no structured parent education program at the facility. This gap was primarily due to lack of time, as hospital staff were focused on meeting the steep demands of performing procedures and providing other clinical care. Therefore, information was provided only sporadically, as time allowed.

In this context, a nurse and a pediatrician from the research unit, along with a clinical nurse, a psychologist, and the Oncology Division Chief at the hospital, decided to form a team to carry out a research project that would demonstrate the impact of educating parents of children with cancer. The results indicated that parents who received the intervention had greater knowledge of their child's disease than the control group. Furthermore, user satisfaction surveys suggested that parents were grateful for the program, stating that the information allowed them to assume a more active role in their child's care [9]. After this study was completed and the evidence was presented, facility administrators decided to create a new permanent position: a nurse educator who would provide information to the parents of pediatric cancer patients. The facility became the first public hospital in Chile with a clinician designated to address the educational needs of new patients and their families. Clearly, the results of this local study prompted the administration to make decisions that enhanced quality of care for this population.

During a second stage of the project, the researchers focused on the findings that emerged from the user satisfaction surveys, in which parents reported that receiving the intervention allowed them to adopt a more active role in their child's treatment and exercise greater autonomy in decision-making regarding their child's care. These findings led the nurse investigators to a new question: Would improving parents' knowledge affect the clinical evolution of their child's pathology? To address this question, the team designed a new experimental study, in which the primary objective was to determine the effect of a structured education program for parents of children with cancer on the frequency of adverse clinical events related to the disease. As with the prior study, the results demonstrated that this structured education program improved parents' knowledge of their child's disease. Furthermore, the new study found a lower incidence of adverse clinical events among patients whose parents received the intervention, including fewer central venous catheter infections and fewer emergency room visits due to fever. These results suggest that parents who received the structured education intervention took on a more active role in managing their child's disease, with a positive impact on the clinical evolution of the pathology over the course of treatment [10].

During the execution of this project, the investigators noted a lack of written educational materials for parents. In response to this gap, the team developed a 182-page book on various aspects of pediatric cancer and its treatment, with a goal of providing a copy to every caregiver of a child with a recent cancer diagnosis. The book was written by 13 specialists from various disciplines related to pediatric cancer, including dietitians, social workers, nurses, physicians, dentists, and psychologists, with content that addressed social, psychological, and physiopathological issues associated with cancer; the importance of treating cancer and complying with care; early warning signs of complications; prevention strategies, signs, and symptoms of mucositis; preventive measures to adopt in the home, including issues related to hygiene and management of food; signs and symptoms of neutropenic fever; information on caring for a central venous catheter; and many other issues. The government of Chile sponsored the launch of the book, and 1000 copies were printed in 2017. In 2018, these copies were distributed to all centers in the PINDA network as well as all private clinics that treat children with cancer in Chile. Furthermore, approximately 1200 families have downloaded the book free of charge via national websites [11-13].

The results of this line of research and the educational materials produced have been presented at the Latin American Society of Pediatric Oncology (SLAOP) and the International Society of Paediatric Oncology (SIOP) [14, 15].

Moreover, as a result of the experiences of this research team, the results produced by the studies, and the levels of coordination achieved by the healthcare teams from various hospital facilities, this research team has received government funding for another research project to be carried out in conjunction with nurses from nine hospitals in the PINDA network. This new project, which is currently in progress, is designed to measure the clinical results associated with hospitalization for episodes of neutropenic fever in children with

cancer and time to first dose of antibacterial therapy, before and after implementation of a protocol for administering the initial dose within the first hour after admission. This protocol includes five measures to

increase the speed of treatment and improve the quality of care for these at-risk patients, including education activities for the healthcare teams who care for these children [16].

Discussion

To achieve the results described above, the research team endeavored to follow best practices from the literature (Table 1). Key factors underlying this success include:

Table 1: Research projects and nursing activities carried out by the Research Unit

| Study and year | Design and population | Results |
|--|---|---|
| Impact of an education program for parents of children with cancer in terms of knowledge about the disease (2010-2012) | Experimental One hospital / Two groups (n=96) | ↑ Level of knowledge Professional nurse designated to meet the educational needs of the parents of pediatric cancer patients |
| Structured education program for parents of children with cancer and its impact on level of knowledge about the disease and frequency of adverse clinical events (2014-2016) | Quasi-experimental Two hospitals/ Two groups (n=102) | ↑ Level of knowledge ↓ Central venous catheter infections ↓ Emergency room visits for neutropenic fever |
| Efficacy, safety, and tolerance of a subcutaneous catheter for granulocyte-colony stimulating factor (G- CSF) administration in children with cancer (2016- 2019) | Experimental One hospital / Two groups | Study in progress |
| Book: “ <i>Caminemos Juntos</i> “ (“Let’s Walk Together”); orientation for parents and caregivers of children with cancer | 182-page book written by 13 pediatric cancer specialists from various health professions | 1000 copies printed 1200 downloads from national websites |
| Quality of life in children and adolescents with osteosarcoma and Ewing’s sarcoma after undergoing conservative surgery vs. amputation (2017-2020) | Experimental One hospital / Two groups | Study in progress |
| Time to administration of first dose of antibiotic treatment and clinical outcomes in children with cancer after hospital admission for neutropenic fever, before and after implementation of a protocol (2018-2020) | Experimental Nine hospitals | Study in progress |
| Education activities for health professionals who care for children with cancer and neutropenic fever in 9 hospitals in Chile (2019) | Participatory and lecture-based education sessions; skills workshops for central venous catheter management | Classes attended by over 900 health professionals |

- Sound guidance from a leader that unites the group and provides mentorship to other team members. Evidence suggests that when the leader of a research team is perceived as supportive, members demonstrate approximately 50% more teamwork behaviors than members of groups whose leaders are seen as unsupportive [17, 18]. Therefore, a good leader should: create spaces in which team members can experiment and develop new lines of research; recognize and support the efforts of the members; and show receptiveness to new ideas. Therefore, the leader should not strive to do everything him/herself but rather be willing to delegate, seek support, and recognize that team members offer a variety of abilities, so that all participants feel comfortable contributing to the group’s efforts [19].
- Include multidisciplinary professionals with varied backgrounds, as a diversity of experiences offers a spectrum of complementary abilities, talents, knowledge, and specific attitudes and experiences. This approach allows for more productive, positive, and gratifying research results. The ideal size of the research team will vary depending on the scope, methods, and design of the studies to be performed.
- Define a set of common objectives and focal points for the research work; promote individual and group responsibility;

and maintain a positive disposition towards working as a team. Team members should understand that they must show commitment to their projects; that their abilities and knowledge are necessary; and that they must understand when their time and talents are required.

- Value the contributions of each team member; generate enthusiasm; and promote consideration towards all team members.
- Organize regular meetings to communicate, coordinate actions, and develop an agenda with clear objectives [17].
- Maintain open and accessible lines of communication, using traditional methods of communication as well as newer options such as file sharing, to enhance collaboration among team members on documents or publications [20].
- Celebrate the successes of the team. This is fundamental for maintaining group cohesion and work satisfaction. Celebrations may include recognizing the contributions of team members by including them as authors on publications or inviting members to give conference presentations [20-22].
- Apply for funding to support the execution of research projects.

- Communicate results through publications and presentations at national and international conferences to share locally-relevant findings and generate international collaborations.

The efforts of the Integrated Clinical Research Unit at HLCM have led to the consolidation of a research team with the capacity to win competitive grant awards (13 projects funded by the Chilean government) and with significant scientific productivity (over 90 publications by its members) from 2008 to 2019 [23]. Furthermore, the collaborative work presented in this article has produced a virtuous cycle, in that other groups of clinical nurses, psychologists, and Physical Therapists on the HLCM Oncology Unit have followed the lead of the original team and developed new research studies involving children with cancer, funded by private oncology foundations in Chile [24, 25].

Implications for pediatric hematology/oncology nursing

The experiences described illustrate the positive effects of collaboration among clinical nurses from academic institutions and hospital facilities. Developing multidisciplinary research teams can allow these professionals to satisfy unmet needs of patients and their families (Figure 1). In this case, for example, the efforts of the team had a positive impact on local policies, as the hospital now employs a nurse educator who provides systematic and standardized education to the parents of children with cancer receiving care in this under-resourced public hospital. The vision of this team is that the evidence produced by their work will allow all patients and families receiving care in public facilities in Chile to access an educational packet with comprehensive information on caring for a family member with cancer as part of a structured education program to improve clinical care for pediatric oncology patients. Therefore, the group strives to continue generating evidence that will promote the establishment of public health policies that would support this goal.

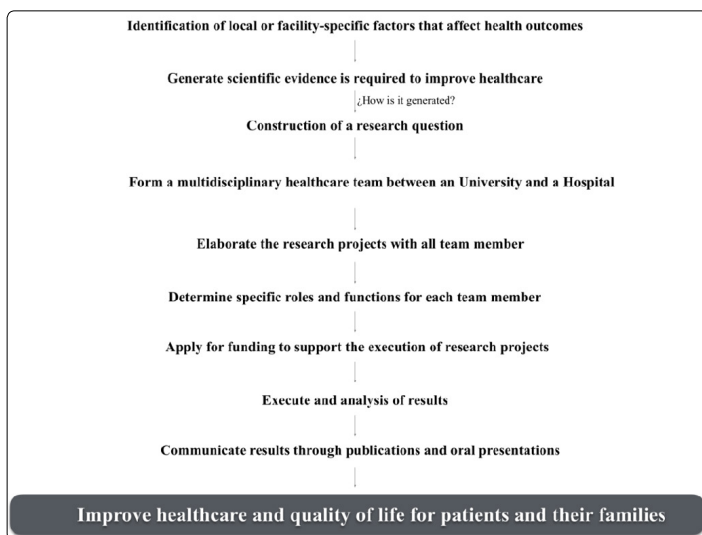


Figure 1: Strategy for developing nursing research to improve the healthcare delivered to patients and their families

Finally, the nurses who were part of this team have received national recognition as pioneers in administering significant

national funds for developing nursing research (Table 2). This experience demonstrates that working as a team is indispensable for achieving productive results and high-quality research. We hope that sharing these findings will stimulate more nursing research that might improve care for patients and families.

Table 2: Recommendations for developing a successful research program within a hospital facility

| | |
|---|--|
| Ensure that the leader of the research team is positive, generous, and accessible | Include multidisciplinary staff on the research team |
| Define roles of each team member | Value the contributions of each member |
| Support the contributions of all members | |
| Stimulate and support the creation of new lines of research by each member | Organize regular team meetings |
| Maintain open and accessible lines of communication | Celebrate the achievements of the team |
| Include all contributors to the project as authors on publications and presentations at conferences | Apply for funding to support research projects |
| Disseminate study results in publications and presentations at conferences | Establish networks and collaborative relationships with other research teams |

Acknowledgements

We would like to thank all of the healthcare professionals in the Oncology Units of PINDA network hospitals in Chile for their constant support and collaboration with our research.

Declaration of conflicting interests

The authors have no potential conflicts of interest with respect to the research, authorship, or publication of this article to declare.

Funding

The author(s) received no financial support for this article.

References

1. Epstein NE. Multidisciplinary in-hospital teams improve patients outcomes: A review. *Surg Neurol Int.* 2014; 28;5(Suppl 7):S295-303. doi: 10.4103/2152-7806.139612
2. Ngoro S. Effective multidisciplinary working: the key to high-quality care. *Br J Nurs.* 2014;10-23;23(13):724-7. doi: 10.12968/bjon.2014.23.13.724.
3. Morar PS, Sevdalis N, Warusavitarne J, Hart A y cols. Establishing the aims, format and function for multidisciplinary team driven care within an inflammatory bowel disease service: a multicenter qualitative specialist-based consensus study. *Frontline Gastroenterol* 2018; 9(1):29-36. doi: 10.1136/flgastro-2017-100835.
4. Clements D, Dault M, Priest A. Effective teamwork in healthcare: Research and reality, *Health Pap.* 2007; 7 N°26-34.

5. Nancarrow S, Smith T, Ariss S, Enderby P. Qualitative evaluation of the implementation of the Interdisciplinary Management Tool: a reflective tool to enhance interdisciplinary teamwork using Structured, Facilitated Action Research for Implementation. *Health Soc Care Community*. 2015; 23(4):437-48. doi: 10.1111/hsc.12173.
6. Programa de drogas antineoplásicas para niños. Estadísticas. 2019 [cited 2019 Dec 27] Available from: <http://www.pindachile.cl/estadisticas/>
7. Santolaya ME, Farfán MJ, De La Maza V, Cociña M, Santelices F, Torres JP, et al. Diagnosis of bacteremia in febrile neutropenic episodes in children with cancer: microbiologic and molecular approach. *Pediatr Infect Dis J*. 2011; 30(11):957-61. doi: 10.1097/INF.0b013e31822a37d7.
8. Torres JP, De la Maza V, Kors L, Villarroel M, Piemonte, Santolaya ME, et al. Respiratory Viral Infections and Coinfections in Children With Cancer, Fever and Neutropenia: Clinical Outcome of Infections Caused by Different Respiratory Viruses. *Pediatr Infect Dis*. 2016; 35(9):949-54. doi: 10.1097/INF.0000000000001209
9. De la Maza V, Fernández M, Concha L, Santolaya ME, Villarroel M, Torres JP, et al. Impact of an educational program for parents of children with cancer on the increased knowledge of their children's disease and the decrease in anxiety. *Rev. Chil. Pediatr*. 2015; 86(5):351-6. doi: 10.1016/j.rchipe.2015.04.027
10. X Concurso Nacional de Proyectos de Investigación y Desarrollo en Salud, FONIS. Efectos de un programa educativo dirigido a padres de niños con diagnóstico de cáncer, en la aparición de eventos adversos relacionados con la enfermedad de sus hijos, nivel de conocimiento de la patología y percepción usuaria de la atención hospitalaria. 2013 [cited 2019 Sep 28]. Available from: <https://www.conicyt.cl/fonis/files/2013/03/Adjudicación-X-Concurso-FONIS-20131.pdf>
11. Hospital de niños Luis Calvo Mackenna. Información a paciente y familia / Información para pacientes oncológicos. 2019 [cited 2019 Dec 2]. Available from: <http://www.calvomackenna.cl/informacion-a-paciente-y-familia/info-pacteoncológicos.php>
12. Fundación Nuestros Hijos. Caminemos Juntos. Orientación para padres y cuidadores de niños con cáncer. 2019 [cited 2019 Dec 03]. Available from: <http://www.fnh.cl/>
13. Programa de drogas antineoplásicas para niños. Caminemos Juntos. Orientación para padres y cuidadores de niños con cáncer. 2019 [cited 2019 Dec 03] Available from: <http://www.pindachile.cl/wp-content/uploads/2019/02/Caminemos-Juntos-2019.pdf>
14. De la Maza V, Simian D, Castro M, Torres JP, Lucero Y, Santolaya ME, et al. Administration Time for the First Dose of Antimicrobials in Episodes of Fever and Neutropenia in Children With Cancer. *Pediatric Infectious Disease Journal*. 2015; 34(10):1069-73. doi: 10.1097/INF.0000000000000820.
15. Verónica De la Maza, Macarena Manriquez, Magdalena Castro, Paola Viveros, María Fernandez, Evelyn Vogel, Erica Peña, María Elena Santolaya, Milena Villarroel, Juan Pablo Torres. Impact of a structured educational programme for caregivers of children with cancer on parental knowledge of the disease and paediatric clinical outcomes during the first year of treatment. *Eur J Cancer Care (Engl)*. 2020 Jul 24;e13294. doi: 10.1111/ecc.13294. Online ahead of print
16. Comisión Nacional de Investigación científica y tecnológica. Tiempo de administración de la primera dosis de antimicrobiano y resultados clínicos en niños con cáncer que consultan por fiebre y neutropenia en nueve hospitales del país, antes y después de la implementación de una intervención. 2017 [cited 2019 Oct 13]. Available from: [integral.https://www.conicyt.cl/fondef/2017/03/08/xiv-concurso-nacional-de-proyectos-de-investigacion-y-desarrollo-en-salud-fonis-2017/#tab-04](https://www.conicyt.cl/fondef/2017/03/08/xiv-concurso-nacional-de-proyectos-de-investigacion-y-desarrollo-en-salud-fonis-2017/#tab-04)
17. Stanley D, Anderson JP. Advice for running a successful research team. *Nurse Res*. 2015; 23(2):36-40. doi: 10.7748/nr.23.2.36.s8.
18. Magrane D, Khan O, Pigeon Y, Leadly J, Grigsby R. Learning about teams by participating in team. *Acad Med*. 2010; 85(8):1303-11. doi: 10.1097/ACM.0b013e3181e5c07a.
19. Kumar R. Teamwork in pediatric heart care. *Ann Pediatr Cardiol*. 2009; 2(2): 140–145. doi: 10.4103/0974-2069.58315
20. Rosa M. Academic research in medicine: the need for teamwork and leadership. *Diagn Cytopathol*; 2014 Jun; 42(6):553-4. doi - 10.1002/dc.22938.
21. Golbert A, Tozer W, Westoby M. Teamwork, Soft Skills, and Research Training. *Trends Ecol Evol*. 2017; 32(2):81-84. doi. org/10.1016/j.tree.2016.11.004
22. Nancarrow SA, Booth A, Ariss S, Smith T, Enderby P, Roots A. Ten principles of good interdisciplinary team work, *Hum Resour Health*. 2013; 10;11:19
23. Unidad de Investigación del Departamento de Pediatría y Cirugía Infantil Oriente de la Universidad de Chile. (2018). Cuenta pública.
24. Fundación Nuestros Hijos. Eficacia, seguridad y tolerancia del uso de catéter subcutáneo para la administración de factor estimulador de colonias (G-CSF) en niños con cáncer, 2016-2018. 2019 [cited 2019 Nov 26]. Available from: <http://www.fnh.cl/investigacion-y-desarrollo/>
25. Fundación Nuestros Hijos. Calidad de vida en niños/as y adolescentes pertenecientes a la red PINDA en Chile con Osteosarcoma y Sarcoma de Ewing óseo de extremidad sometidos a cirugía conservadora o amputación de su extremidad, 2017-2019. 2019 [cited 2019 Nov 26]. Available from: <http://www.fnh.cl/investigacion-y-desarrollo/>

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