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Anti-Vaccine Movement and its Implications for Vaccination Coverage of the Brazilian Population: A Scoping Review

By Amanda Dagnon da Silva, Marília Dagnon da Silva, Camila Tiemi Wassano,
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Roberta Cristina Barboza Galdêncio & Sidney Marcel Domingues

University of Marília

Abstract- Objective: Our intention was to analyze production on the anti-vaccine movement and its implications

Anti-Vaccine Movement and its Implications for Vaccination Coverage of the Brazilian Population: A Scoping Review

Amanda Dagnon da Silva ^α, Marília Dagnon da Silva ^σ, Camila Tiemi Wassano ^p,
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Abstract- Objective: Our intention was to analyze production on the anti-vaccine movement and its implications for vaccination of the Brazilian population in the indexed scientific literature.

Methods: We used the systematic scoping review to search the following databases: PubMed, Scopus, Web of Science, Burry, Lilacs/BVS and Scielo.JBI and PRISMA-SCR international protocols were adopted for the search and screening of scope-related articles. The guiding question was built through the acronym PCC (population, concept and context). The information was extracted, categorized regarding the relationship with the theme of the anti -v

part of their time and resources to express, mainly through digital media, their position with regard to vaccines since this movement also has the aim to attract new fans. Still according to the authors, the participants call themselves defenders of freedom of choice in relation to getting vaccinated and the transparency of public information with an anti-vaccination rhetoric, addressing controversial issues to legitimize their decisions. With the assumption that if the subject is in high proportion in the media, there is greater generation of fear in the population, resulting in the decline of immunizations.

In the present scoping review, based on the assumption presented, our intention was to analyze the production on the anti-vaccination movement and its implications for vaccination coverage of the Brazilian population in the indexed scientific literature.

publication, name of authors, title of journal, country of journal, original language of publication, year of publication, relation of publication to the theme of the anti-vaccine movement and vaccination coverage and, finally, whether the publication mentioned implications of the anti-vaccination movement on vaccination coverage of the Brazilian population and/or the general population. At the same time, we also built an excel spreadsheet with the summaries and conclusions from the studies selected as sources of evidence. Next, for data analysis, we categorized the publications included in the study according to the relationship with the theme (1- the publication has no direct relationship with the theme; 2- the publication has a partial relationship with the theme; 3- the publication presents direct relationship with the theme).

We also categorized the implications mentioned by the publications (1- the publication mentions implications in the vaccination coverage of the Brazilian population; 2- the publication mentions implications in the vaccination coverage of the general population; 3- the publication does not mention implications in the vaccination coverage of the Brazilian population and/or in general).

And finally, the file with the summaries and conclusions of the included studies were imported into the Iramuteq software,⁷ through which the textual corpus analysis was carried out, specifically the similarity analysis, which is anchored in graph theory. Similarity analysis

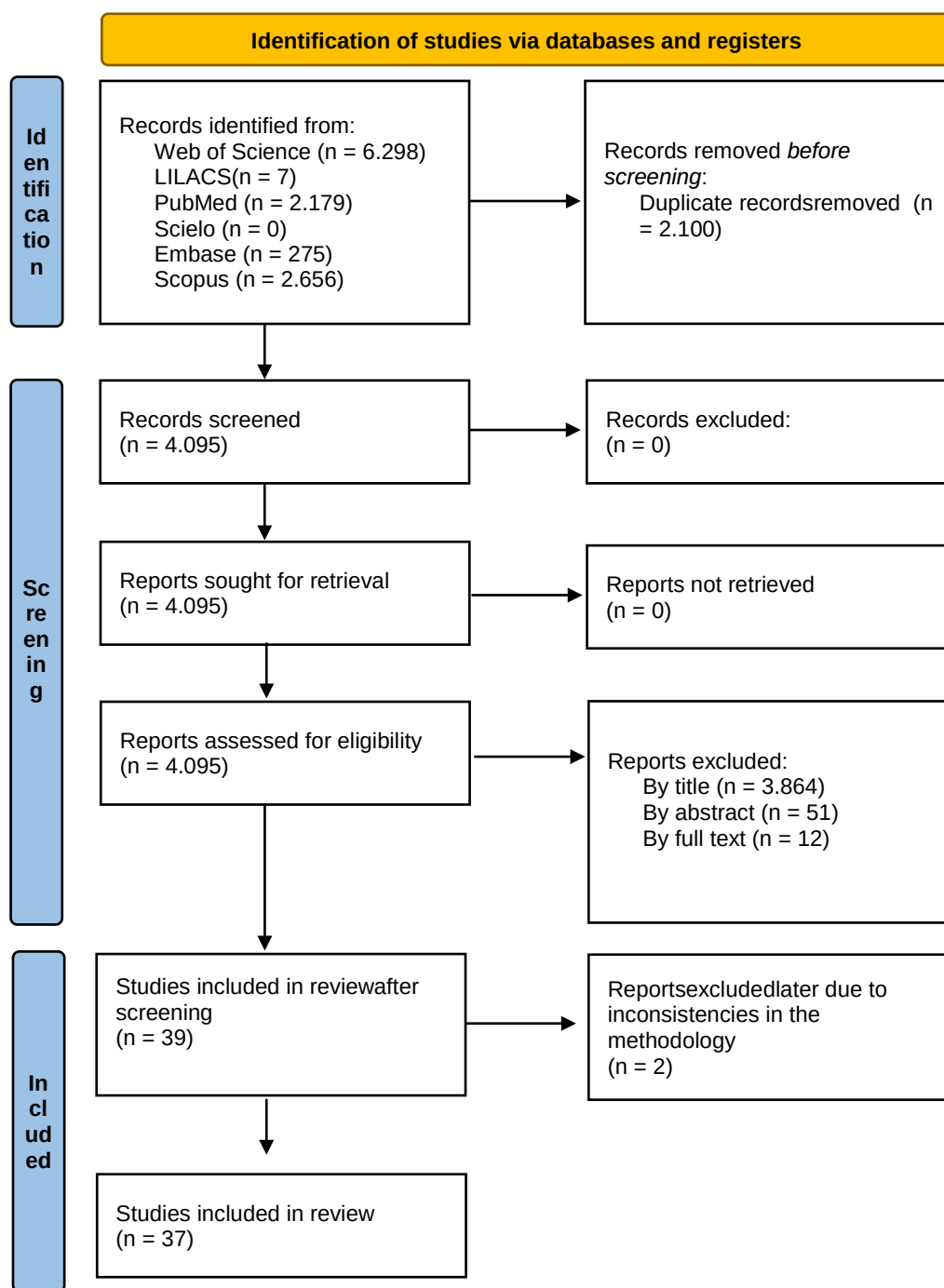


Table 1: Synthesis of publications selected as sources of evidence in the PubMed, Scopus, Web of Science, Embase, Lilacs/BVS and SciELO electronic databases.

Publication Title	Authors Name	Journal Title	Country of the Journal	Original Language of Publication	Year of Publication
Understanding those who do not understand: a brief review of the anti-vaccine movement	Poland GA, Jacobson RM	Vaccine	USA	English	2001
Anti-vaccinationists past and present	Wolfe RM, Sharp LK	The BMJ	USA	English	2002
Anti-vaccine activists, Web 2.0, and the postmodern paradigm--an overview of tactics and tropes used online by the anti-vaccination movement	Kata A	Vaccine	Canada	English	2012
Parents' Refusal to Vaccinate Their					

Polarization of the vaccination debate on Facebook	Schmidt AL, Zollo F, Scala A, Betsch C, Quattrocioni W	Vaccine	Italy	English	2018
What is the importance of vaccine hesitancy in the drop of vaccination coverage in Brazil?	Sato APS	Revista de Saude Publica	Brazil	English	2018
The Influence of Antivaccination Movements on the Re-emergence of Measles	Patricia CRN, Zulay JPY, Carlos RLJ, Alejandra CM, Cristina JSR, Josefina RV	J. Pure Appl. Microbiol.	Mexico	English	2019
The anti-vaccination debate and the microbiome: How paradigm shifts in the life sciences create new challenges for the vaccination debate	Guttinger S	EMBO Rep.	UK	English	2019
Temporal trends in anti-vaccination discourse on Twitter	Gunaratne K, Comoés EA, Hagbayan H	Vaccine	Canada	English	2019
An analysis of pro-vaccine and anti-vaccine information on social networks and the internet: Visual and emotional patterns	Cuesta-Cambra U, Martínez-Martínez L, Niño-González JI	El profesional de la información	Spain	Spanish	2019
Analysis of the Anti-Vaccine Movement in Social Networks: A Systematic Review	Ortiz-Sánchez E, Velando-Soriano A, Pradas-Hernández L, Vargas-Román K, Gómez-Urquiza JL, Cañadas-De la Fuente GA e Albendín-García L	International Journal of Environmental Research and Public Health	Spain	English	2020
#Antivaccination on Instagram: A Computational Analysis of Hashtag Activism through Photos and Public Responses	Kim Y, Song D, Lee YJ	International Journal of Environmental Research and Public Health	Korea	English	2020
Parental autonomy in health and anti-vaccine movement conformation in the post-truth scenario	Borges GS, Cervi TD, Piaia TC	Revista Jurídica	Brazil	Portuguese	2020

'Should I vaccinate my child?' comparing the displayed stances of vaccine information retrieved from Google, Facebook and YouTube	ElkinLE, PullonSRH, Stubbe MH	Vaccine	New Zealand	English	2020
Fact vs Fallacy: The Anti-Vaccine Discussion Reloaded	Stolle LB, Nalamasu R, Pergolizzi Jr JV, Varrassi G, Magnusson P, LeQuang J, Breve F, The NEMA Research Group	Advances in therapy	USA	English	2020
Anti-vaccine movements - a form of social activity for health care, ignorance or diversion aimed at destabilizing the health situation? Part 1. Epidemiological safety. Vaccinations - pros and cons	Kołątaj WP, Kołątaj B, Panasiuk L, Sobieszczański J, Karwat ID	Annals of Agricultural and Environmental Health	Poland	English	2020
Anti-vaccine movements - health care, ignorance or a diversion aimed at destabilizing the health situation? Part 2. Contemporary conditions for the functioning and development of anti-vaccination movements	Kołątaj BM, Kołątaj WP, Karwat ID, Sobieszczański J, Panasiuk L	Annals of Agricultural and Environmental Health	Poland	English	2020
Characteristics of Antivaccine Messages on Social Media: Systematic Review	Wawrzuta D, Jaworski M, Gotlib J, Panczyk M	Journal of Medical Internet Research	Poland	English	2021
Covid-19, the anti-vaccine movement and immunization challenges in Brazil: a review	Bivar GCC, Aguiar MESC, Santos RVC, Cardoso PRG	Scientia Medica	Brazil	English	2021
Understanding Anti-Vaccination Attitudes in Social Media	Mitra T, Counts S, Pennebaker JW	Proceedings of the Tenth International AAAI Conference on Web and Social Media (ICWSM 2016)	Georgia	English	2021
Vaccine fake news: an analysis under the World Health Organization's 3Cs model	Frugoli AG, Prado RS, da Silva TMR, Matozinhos FP, Trapé CA, Lachtim SAF	Journal of School of Nursing – University of São Paulo	Brazil	English	2021

Vaccine Hesitancy, Acceptance, and Anti-Vaccination: Trends and Future Prospects for Public Health	Dubé È, Ward JK, Verger P, MacDonald NE	Annual Review of Public Health	Canada	English	2021
Vaccine hesitancy and anti-vaccination in the time of COVID-19: A Google Trends analysis	Pullan S, Dey M.	Vaccine	UK	English	2021
Identifying Vaccine Hesitant Communities on Twitter and their Geolocations: A Network Approach	Ruiz JB, Featherstone JD, Barnett GA	Proceedings of the 54th Hawaii International Conference on System Sciences 2021	USA	English	2021
Ecological model of health behavior as a methodology for reducing anti-vaccination trends	Braverman A	Wien Klin Wochenschr	USA	English	2021
"Brazil is still na huge hospital": Hygienist and Anti-vaccine Movements in Brazil - from the incipient Republic to the contemporary	Wermuth MAD, Nielsson JG, Tertuliano GC	Revista Academica Da Faculdade De Direito Do Recife	Brazil	English	2021
The Model of "Informed Refusal" for Vaccination: How to Fight against Anti-Vaccinationist Misinformation without Disregarding the Principle of Self-Determination	D'Errico S, Turillazzi E, Zanon M, Viola RV, Frati P, Fineschi V	Vaccines	Italy	English	2021
Pro-Vaxxers Get Out: Anti-Vaccination Advocates Influence Undecided First-Time, Pregnant, and New Mothers on Facebook	Bradshaw AS, Shelton SS, Wollney E, Treise D, Auguste K	Health communication	USA	English	2021
Multi-perspectives systematic review on the applications of sentiment analysis for vaccine hesitancy	Alamoodi AH, Zaidan BB, Al-Masawa M, Taresh SM, Noman S, Ahmaro IYY, Garfan S, Chen J, Ahmed MA, Zaidan AA, Albahri OS, Aickelin U, Thamir NN, Fadhil JA, Salahaldin A	Computers in Biology and Medicine	Malaysia	English	2021

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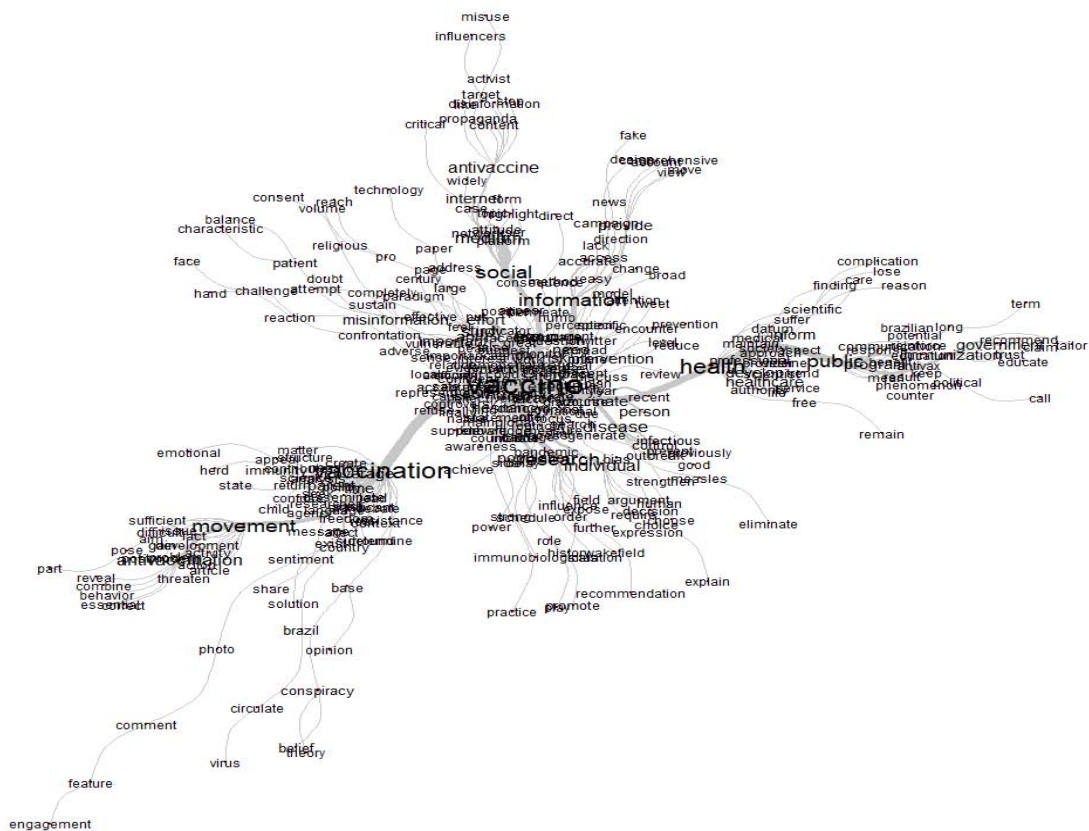
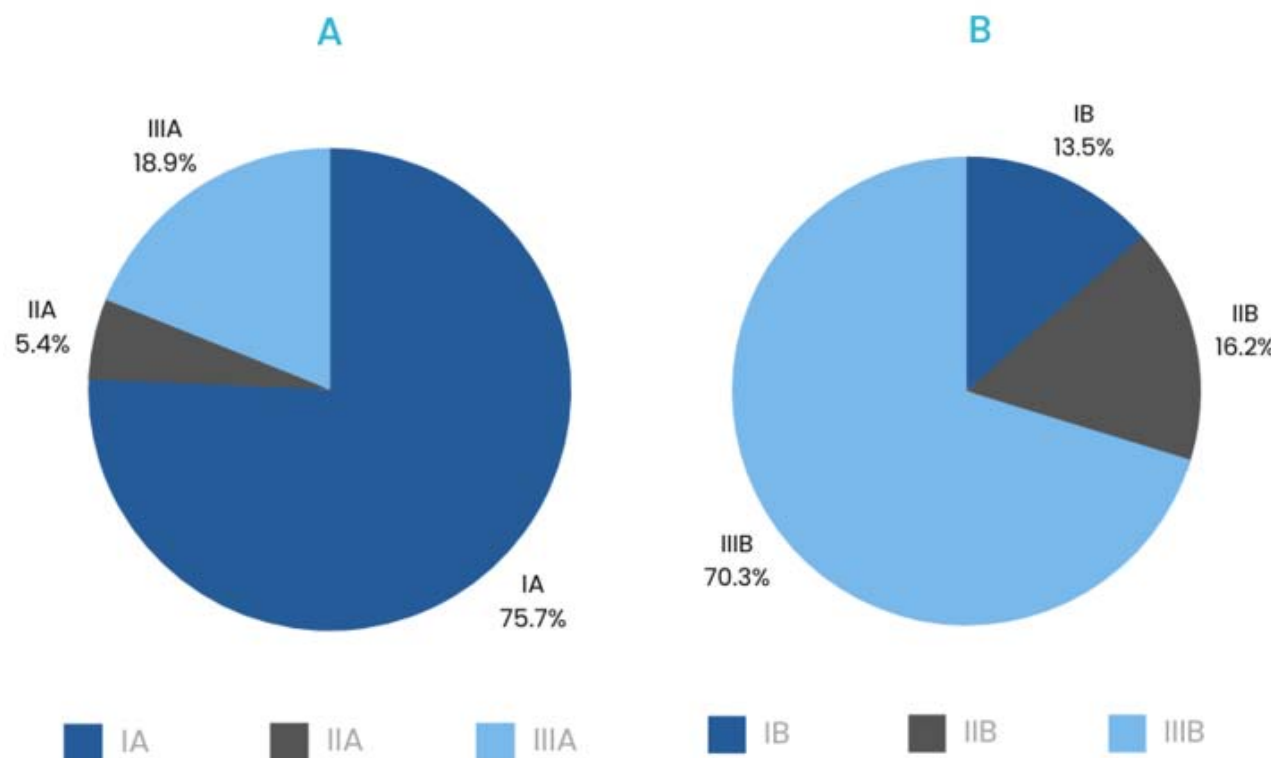


Figure 3

When we analyzed the relationship between the central theme of the 37 publications and the “Anti-Vaccine Movement” (Figure 4A), it was possible to observe that 28 (75.7%) had no direct relationship, 2 (5.4%) had a partial relationship with the theme and only 7 (18.9%) have a direct relationship.

And when we analyzed the mentions of the 37 publications regarding the implications of the “Anti-vaccine Movement” in the vaccination coverage of the Brazilian population and/or in general (Figure 4B), it was possible to observe that only 5 (13.5%) mentioned implications in the vaccination coverage of the Brazilian population, 6 (16.2%) mentioned implications in the vaccination coverage of the general population and 26 (70.3%) did not mention implications in the vaccination coverage of the Brazilian population and/or in general.



I-A: The publication is not directly related to the theme.

II-A: The publication is partially related to the theme.

III-A: The publication is directly related to the theme.

I-B: The publication mentions implications for vaccination coverage in the Brazilian population.

II-B: The publication mentions implications for vaccination coverage in the general population.

III-B: The publication does not mention implications for vaccination coverage in the Brazilian population and/or in general.

Figure 4: Graph with the number of publications and their relationship with the theme, in addition to mentions or not of implications for vaccination coverage in the Brazilian population and/or in general.

IV. DISCUSSION

The present scoping review sought to analyze the production on the anti-vaccination movement and its implications for vaccination coverage of the Brazilian population in the indexed scientific literature.

The 37 articles selected as sources of evidence made it possible to identify that, in the last two decades, there has been a significant increase in publications that address the theme of the "Anti-Vaccine Movement," going from 2 publications identified in the period from 2000 to 2010, increasing to 21 publications between 2011 and 2020 (ten times more), and between 2021 and 2023, already a number of 14 publications, which points to an increasing trend on the subject in the coming years.

From the similarity analysis carried out in the present study, it was possible to identify that the theme "vaccine" is a central theme in the publications, which is corroborated by the presence of the term in the center of the graphs of the abstracts and conclusions of the selected articles. The theme of the "anti-vaccination

movement," despite the articles having become increasingly present and gaining greater attention,³¹ is shown peripherally in our similarity graphs. This peripheral location of the "anti-vaccination movement" theme, as well as the absence of a direct relationship with the theme in most of the publications in our scoping review (28, 75.7%), indicates how this subject has been presented in the indexed scientific literature.

The publications selected as sources of evidence allowed us to perceive that there is a prevalence of use of the concepts of vaccine hesitation, vaccine refusal, with little mention of the term "Anti-Vaccine Movement" and the implications for vaccination coverage of the Brazilian population and/or in general.

The term "anti-vaccination movement" seems to be gaining more visibility in scientific research with the advent of social networks and, mainly, "fake news," which since 2016 have contributed greatly to the reduction of vaccination coverage in the population. Fake news is considered false information disseminated irresponsibly and at high speed, mainly in digital media. For the elaboration of such news, there is a complete

absence of scientific information with respectable levels of evidence, being based on denialism that becomes more evident every moment.⁴⁷

Such denial of science constitutes a major risk to Public Health, as demonstrated in the pandemic caused by Sars-CoV-2, in which empirical methods of prevention and treatment were passed on inconsequentially from individual to individual, evidencing the lack of respect and credibility to specialists and authorities in the area. *Fake news* circulates on the main social networks such as Facebook, Instagram, Twitter and Youtube, addressing a dangerous anti-vaccination discourse guided, by many, as the restriction of individual freedom being one of the consequences of vaccination.⁴⁸

Digital media, as well as mass media, are important tools for disseminating news and information. Shapers of beliefs and popular opinions, they should be used as means by health and government authorities, aiming at carrying out health education with awareness plans accessible to the population. It is necessary to note that in the midst of the "information society" there is so much disinformation shared and taken as truth.⁴⁹

V. LIMITATIONS

Systematic scoping reviews have some limitations, such as the possibility of bias in the selection of studies, since not all studies can be included. In addition, the quality and availability of studies can affect the results. It is also important to consider that scoping reviews may not provide a complete summary of the results, since they do not carry out statistical analysis of the data. Additionally, a limitation of great relevance related to our work is the fact that for the study of this theme we are more in the field of ideas and associated with social networks.

VI. CONCLUSION

The number of scientific publications on the anti-vaccination movement and its implications for vaccination coverage of the Brazilian population, from March 2001 to March 2022, is scarce and figures peripherally compared to the publications selected as sources of evidence in the present scoping review.

It is of great importance that new studies be carried out directly addressing this issue, clearly explaining the implications for the vaccination coverage of this population.

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The Effectiveness of a Structured Training Program in Transforming to an Electronic System in Promoting the Quality of Nursing Care

By Ali M. Al Yasien, RN, MSN, PHD student, Dr. Abdulmajeed Al Shehah, Shini Cherian, RN, MSN, Deirdre Hawkins, RN, MSC, Mary Van Eck, RN, BSN, Yamen A. Hamed, RN, MSN, Manal Al Essa, RN, MSN, Ahmed I. Alomar, RN, MSN, Salem A. Al Shammari, RN, MSN & Hameed J. Al Enazi, RN, MSN

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Abstract- Background: In today's dynamic health systems, technology plays an essential role in education and nursing practice. Therefore, it is necessary to study the changing role of nurses and highlight the need for appropriate information technology educational programs to integrate with the ever-increasing pace of technology. Nursing informatics helps improve vital nursing processes, such as documentation, which is a critical aspect of the profession and essential for effective patient care. Before electronic health records, nurses recorded patient information on charts, which could easily be mismanaged. Today, nursing informatics simplifies documentation and automates the transmission of patient data via connected devices to provide access for nurses, physicians, and patients.

Keywords: *nursing informatics, structured training program, pre-experimental study, electronic documentation system, electronic health records.*

GJMR-K Classification: LCC: RT50.5



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The Effectiveness of a Structured Training Program in Transforming to an Electronic System in Promoting the Quality of Nursing Care

Ali M. Al Yasien, RN, MSN, PHD student ^α, Dr. Abdulmajeed Al Shehah ^σ, Shini Cherian, RN, MSN ^ρ,
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Abstract- Background: In today's dynamic health systems, technology plays an essential role in education and nursing practice. Therefore, it is necessary to study the changing role of nurses and highlight the need for appropriate information technology educational programs to integrate with the ever-increasing pace of technology. Nursing informatics helps improve vital nursing processes, such as documentation, which is a critical aspect of the profession and essential for effective patient care. Before electronic health records, nurses recorded patient information on charts, which could easily be mismanaged. Today, nursing informatics simplifies documentation and automates the transmission of patient data via connected devices to provide access for nurses, physicians, and patients.

Objectives:

1. To evaluate, from the staff's perspective, the effectiveness of a Structured Training Program on nursing informatics in the Security Forces Hospital Program, Riyadh.
2. To identify correlations between the variables.
3. To compare the benefits of using electronic documentation before and after system implementation.

Methods: This pre-experimental study was conducted at the Security Forces Hospital Program, Riyadh, Saudi Arabia. The target study population was the nursing staff. A systematic sampling technique was used to select 25% of the nursing staff from all departments to undergo the training process. From May to September 2022, a pre-test was conducted followed by structured lectures and practical sessions for the entire sample. Data were collected during a pre-test, and the final evaluation was done through a survey to evaluate the effectiveness of a structured training program in converting to an electronic system to promote the quality of nursing care.

Results: In total 226 nurses were recruited for the study, with a response rate of 100% for the pre-test. The results of the study showed that there was a highly significant improvement in the nurses' levels of knowledge, skill, and confidence, confirming that the structured training program was effective. The results of this study also showed that the majority of participants (93%) were satisfied with using electronic documentation.

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Conclusion: The benefits of nursing informatics reduced errors, improved nurse productivity, better care coordination among healthcare providers, and improved quality of care throughout the various stages of care. The results of this study confirmed the benefits of converting to an electronic documentation system.

Keywords: nursing informatics, structured training program, pre-experimental study, electronic documentation system, electronic health records.

I. INTRODUCTION

In today's dynamic health systems, technology plays an essential role in education and nursing practice, which results in the changing role of nurses and highlights the need for educational programs to integrate appropriate information technology into healthcare. Nursing personnel face a significant challenge to fully benefit from adopting new technological resources in performing their work in a more efficient and effective way.

The success of nursing informatics points to a promising future in its application to nursing practice. The results of one study showed that nursing information systems improved quality through better nursing documentation processes, enhanced patient care planning, and optimized workflow (Darvish et al., 2014). Another case study found a correlation between the technologies used to administer medications and reductions in medication errors, which, in addition to improving patient safety, reduced anxiety in nurses and increased job satisfaction (Kaihlainen et al., 2021).

a) Significance of the Study

Nursing informatics helps improve vital nursing processes, such as documentation, which is a critical aspect of the profession and essential for effective patient care. Before electronic health records, nurses recorded patient information on charts, which could easily be mismanaged. Today, nursing informatics simplifies documentation and automates the transmission of patient data via connected devices to provide access for nurses, physicians, and patients.

Through the application of nursing science, information technology, and analytical sciences, nursing informatics helps enrich healthcare delivery processes and improve patient outcomes by ensuring that critical technologies connect nurses, doctors, and patients to relevant data and each other.

This study is particularly significant in Saudi Arabia, as digitization is emphasized in the Saudi Vision 2030 program, stating, "In technology, we will increase our investments in, and lead, the digital economy" (Almoheza, 2018).

It is hoped that the results of this study may contribute to the nursing profession and other research.

b) Purpose of the Study

1. To evaluate the effectiveness of a structured training program on nursing informatics in the Security Forces Hospital Program, Riyadh, from the staff's perspective.
2. To determine the correlations between the variables.
3. To compare the benefits of using electronic documentation pre and post implementation of the system.

c) Conceptual/Theoretical Framework

A conceptual framework is a theoretical research approach that is scientifically based and emphasizes the selection, arrangement, and classification of its concepts. A conceptual model or framework broadly explains phenomena of interest, expresses assumptions, and reflects a philosophical stance. The conceptual framework formalizes the thinking process so that others may read and understand the frame of reference basic to the research problem. It provides a frame of reference for clinical practice, research, and education.

The conceptual framework of the present study is based on Von Bertalanffy's (1968) general system theory, which defines input, throughput, output, and feedback. According to this theory, a system is a group of elements that interact with one another to achieve a goal. An individual is a system because they receive input from their environment. All living systems are open—there is a continual exchange of matter, energy, and information. The system is cyclical in nature and continues to be so, as long as the four parts (input, throughput, output, and feedback) keep interacting. If there are changes in any of the parts, it will trigger changes in all aspects. Feedback from within the system or the environment provides information, which helps the system determine whether it is meeting its goals.

- Input: It consists of information, material, or energy that enters the system. All systems must receive varying types and amounts of data from the unit. In the present study, input refers to a structured

teaching program regarding electronic documentation systems.

- Throughput: The systems process the input internally, which is called throughput, which refers to the administration of a structured training program for staff nurses regarding an electronic documentation system, which is intended to increase their knowledge, skills, and confidence.
- Output: Outputs is released into the environment in an attempt to restore equilibrium to the environment and refers to energy, material, and information leaving a system after the process. The expected outcome of the present study was obtained by accessing knowledge, skills, and confidence through a questionnaire and Likert scale. The output was evaluated in terms of increments in post-test knowledge, skills, and confidence scores.
- Feedback: Feedback allows a system to regulate itself and provides information about the system's output, that is, response to the system that allows it to monitor itself over time and move closer to a steady state known as equilibrium or homeostasis. It may be positive, negative, or neutral. In the present study, feedback was defined as a process of maintaining the effectiveness of the structured training program. It was assessed by comparing pre-test and post-test scores through the 't' value and identifying correlations between variables. Feedback was used to measure the benefits of the electronic documentation system.

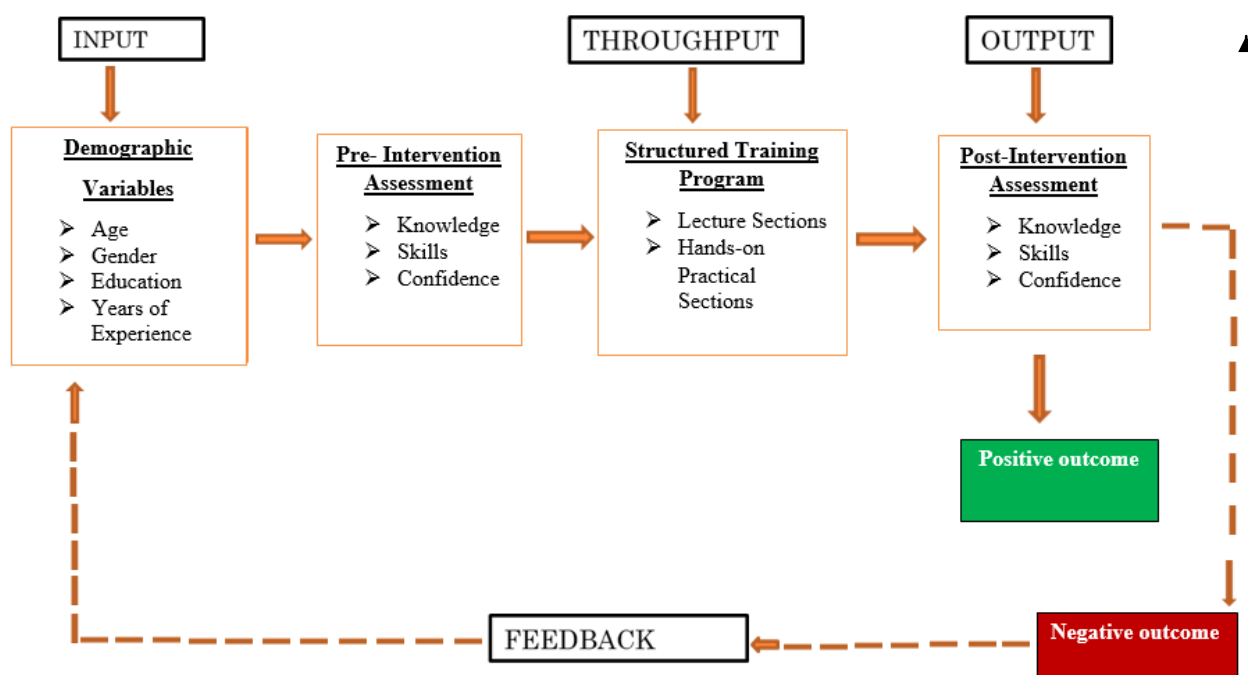


Figure1: General systems theory (GST) was outlined by Ludwig Von Bertalanffy (1968).
----- Not included in the study |

Figure 1: General systems theory (GST) was outlined by Ludwig Von Bertalanffy (1968).

Not included in the study

d) Definition of Terms

Nursing informatics: Nursing informatics is defined by the American Nurses Association (ANA) as “a specialty that integrates nursing science with multiple information and analytical sciences to identify, define, manage, and communicate data, information, knowledge, and wisdom in nursing practice.”

Structured training program: A structured training program has a detailed schedule, time frame, outline of activities, and assignment of responsibilities (Grove & Gray, 2023). It has well-defined goals and consequences. A structured training program leads to more success and employee development than an informal or unstructured one. *Structured training* is a systematic approach to training to prepare employees for career advancement.

Nursing staff: Nursing staff refers to the registered nurses, licensed practical nurses, nurse aides, and others under nurse supervision who provide patient care.

Quality of care: The degree to which health services for individuals and populations increase the likelihood of desired health outcomes (WHO).

II. LITERATURE REVIEW

The use of digital services has become an essential part of nurses' work, and consequently, competencies related to informatics have become a necessary prerequisite for nurses to perform their professional roles (Khezri & Abdekhooda, 2019; Kinnunen et al., 2019; T.I.G. E.R., 2011). Nursing informatics is defined as the processing of information (collecting, processing, storing, and sharing data) and the integration of Informatics Competency Training for promoting patients' or clients' health (Staggers et al., 2002; Staggers & Thompson, 2002). Nurses' informatics competence affects the quality of healthcare (Darvish et al., 2014; LIN et al., 2014), and nurses need sufficient informatics literacy to provide safe care for patients and manage services (De Gagne et al., 2012).

To take advantage of new technological resources that allow nurses to perform their work in a more efficient and effective way, they must take on the challenge of systematic training. Nursing informatics is designated in several countries as an essential competence for nursing professionals.

The need to continue with adequate training in nursing informatics can improve knowledge, skills and abilities to perform specific informatics tasks that has been recognized by national and international healthcare systems and the nursing community. This

highlights the importance of implementing initiatives to promote nursing informatics competency among nurses in all fields.

A critical assessment of emerging technologies found that the key elements required for implementing nursing informatics were healthcare promotion, advanced systems, internet access, and a network. Because of the nature and development of the information age, receiving the necessary information technology training is required for all categories of nurses.

In today's world, the potential for incorporating informatics and communication technology to enhance the quality of nursing outcomes markedly (Booth et al., 2021). Nurses communicate with patients more closely and interact with technology more frequently. Incorporating technology should create a positive outcome in nursing productivity. Information technology has transformed healthcare and nursing in several aspects, including clinical, management, education, and research areas. Nurses' confidence in using information technology is critical to integrating it successfully in the nursing field. Healthcare managers are advised to

investigate nurses' experiences with information technology in their hospitals and organize courses to orient hesitant nurses toward adopting information technology (Farokhzadian et al., 2020).

III. METHODOLOGY

a) Research Design, Sampling, and Instrumentation

i. Research Design

A pre-experimental study conducted at the Security Forces Hospital Program in Riyadh, Saudi Arabia. The research applied a pre-experimental design in which participants completed a pre-test (O1), were exposed to treatment (X, a structured training program), and then completed a post-test (O2) (Polit & Beck, 2021). The aims of the study were first to know whether there is a significant difference before and after the structured training program and second, to understand whether a structured training program can improve nurses' knowledge, skill, and confidence in the use of nursing informatics. Finally, a comparison was made between the effectiveness of manual and electronic documentation.

Table 1: Pre-experimental design, one group (Polit & Beck, 2019).

Pre-test	Treatment	Post-test
O1	X	O2

ii. Variables and Indicators

There were two variables in this research—the independent variable and the dependent variable. The independent variable was the use of a structured training program (which comprised lectures and hands-on practice), and the dependent variable was the staffs knowledge, skill, and confidence levels.

iii. Population

The population for this study was all nurses.

Inclusion and Exclusion Criteria

Nursing staff from all inpatient departments were included in the study. Staff from the administrative and outpatient departments were excluded from the survey.

Sample and Sampling Technique

A systematic sampling (*n*4th) technique was used to select a sample of 25% of all the nursing departments that underwent the training process. Between May and September 2022, a pre-test assessment was conducted, followed by structured lectures and practice sessions for the entire sample. Data were collected using a pre-test, and the final evaluation was done through a post-test survey to evaluate the effectiveness of a structured training program on converting to an electronic system to promote the quality of nursing care.

iv. Research Hypotheses

The researcher formulated the hypotheses to be tested. They were as follows:

1. The null hypothesis (H0) is that there is no significant relationship between pre-test and post-test.
2. The alternative hypothesis (H1) is that there is a significant relationship between pre-test and post-test.

v. Instruments/Tools

To collect the required data, a survey questionnaire was applied twice—once in a pre-test and next in a post-test—to assess knowledge and to record observations in the practice session using a Likert scale to rank the level of confidence.

vi. Data Collection Procedures

The researcher used the following data collection methods:

1. Pre-test

Study participants filled out the pre-test questionnaire before taking the structured training program to measure their prior knowledge, skill, and level of confidence.

2. Treatment

The treatment stage—participating in the structured training program on the nursing informatics documentation system—was applied through lectures and hands-on practical sessions (Banandur et al., 2020).

3. Post-test

After the training, the staff filled out the post-test questionnaire assessing knowledge and an observation checklist for the practical sessions with a Likert scale ranking their level of confidence.

4. Comparing pre-test and post-test results

Pre-test and post-test results were compared to determine whether the structured training program in nursing informatics had effectively improved the nursing staffs knowledge, skills, and confidence level.

vii. Ethical Considerations

Before initiating the study, ethical permission was secured through approval from the Research Committee as per hospital policy. The necessary

consent was obtained from the Research Ethics Committee of the Security Forces Hospital program.

viii. Data Analysis and Evaluation

The data were analyzed as follows:

1. The nurses' mean scores on the pre-test and post-test were calculated
2. The percentage of improvement in the nurses' pre-test and post-test scores were calculated
3. *At*-test to calculate the significance of differences between the nurses' pre-test and the post-test scores was applied
4. The Pearson's correlation coefficient to identify correlations between variables was applied
5. Manual and electronic documentation using ANOVA were compared (Heavey, 2019).

Table 2: The criteria for hypothesis testing.

Comparison	Hypotheses	
	H0	H1
$t\text{-test} < t\text{-table}$	Accepted	Rejected
$t\text{-test} \geq t\text{-table}$	Rejected	Accepted

Table 2 shows that 1) if the *t*-test value is lower than the *t*-table value, the null hypothesis is accepted, and the alternative hypothesis is rejected, and 2) if the *t*-test value is equal to or greater than the *t*-table value, the null hypothesis is rejected and the alternative is accepted (Rao & Richard, 2012).

IV. RESULTS

a) Demographic Variables among Staff Nurses

Half of the staff nurses belonged to the 31–40 age group, followed by 26.5% who were in the 41–50 age group, followed by 26.5% who were in the 41–50

age range, with only 10.6% being 50 and above. The majority (86.3%) of staff nurses were female.

Regarding years of experience, about 25.7% of staff nurses had 1–5 years, followed by 24.8% who had 6–10 years, and 23.5% with 11–15 years of experience. Most of staff nurses (79.6%) had completed a bachelor's degree, and only 5.8% had completed a master's degree (Fig. 2).

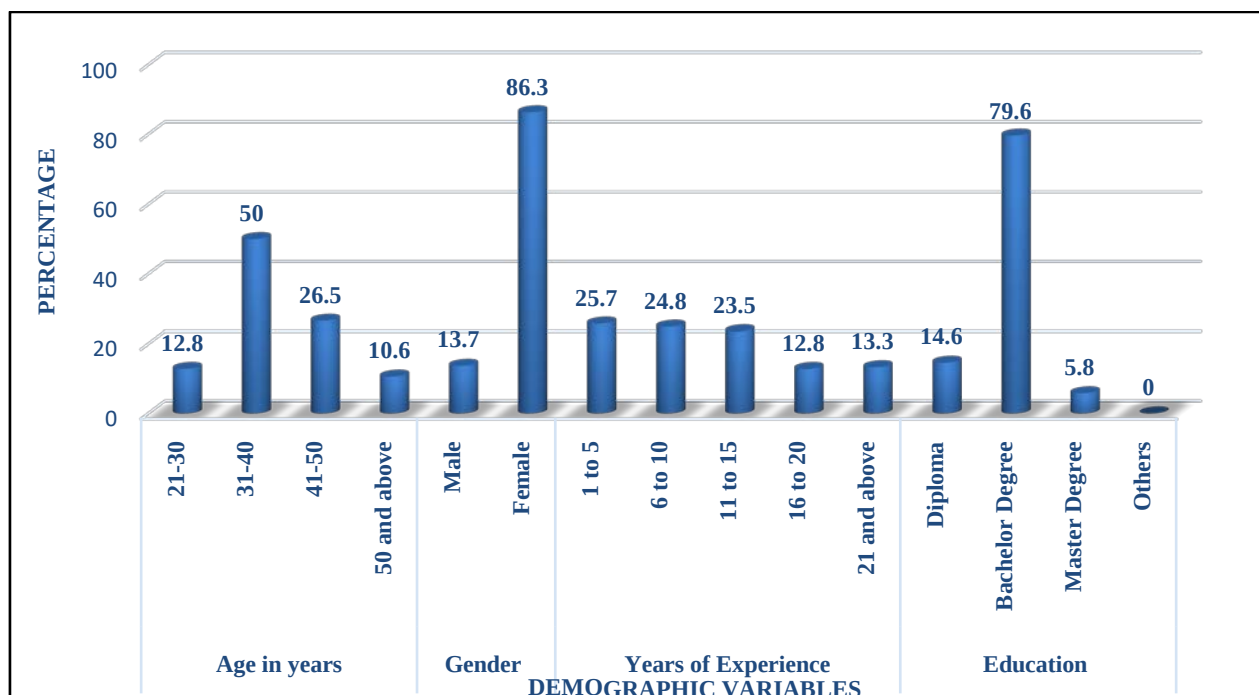


Figure 2: Percentage distribution of staff nurses based on age, gender, years of experience, and education.

b) *Comparison of Pre- and Post-test Levels of Knowledge of Staff Nurses*

Pre-testing – the greatest part (35.8%) of the nurses had satisfactory knowledge, and 32.3% had fair knowledge. Only 2.7% had excellent knowledge

regarding nursing informatics. In the post-test, 46.5% of the nurses had excellent understanding, 35.4% had satisfactory understanding, and none had a poor level of understanding (Fig. 3).

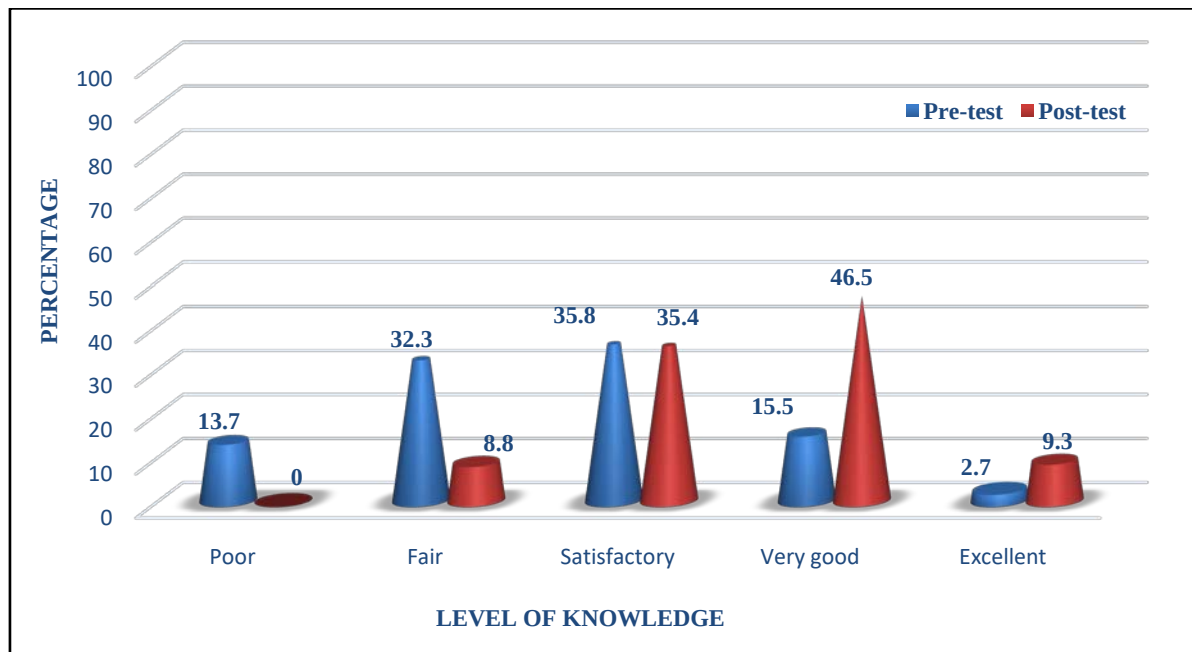


Figure 3: Percentage distribution of levels of knowledge among staff nurses at pre-test and post-test.

c) *Comparison of Pre- and Post-test Skills of Staff Nurses*

In pre-testing, the most significant part (35.4%) of the nurses had satisfactory skill levels, 35% had fair skill levels, and only 4% had excellent skills in nursing informatics. In the post-test, the most significant part

(47.3%) of the nurses had an excellent skill level, 35.4% had a satisfactory level of skill, and only 0.4% had a poor level (Fig. 4).

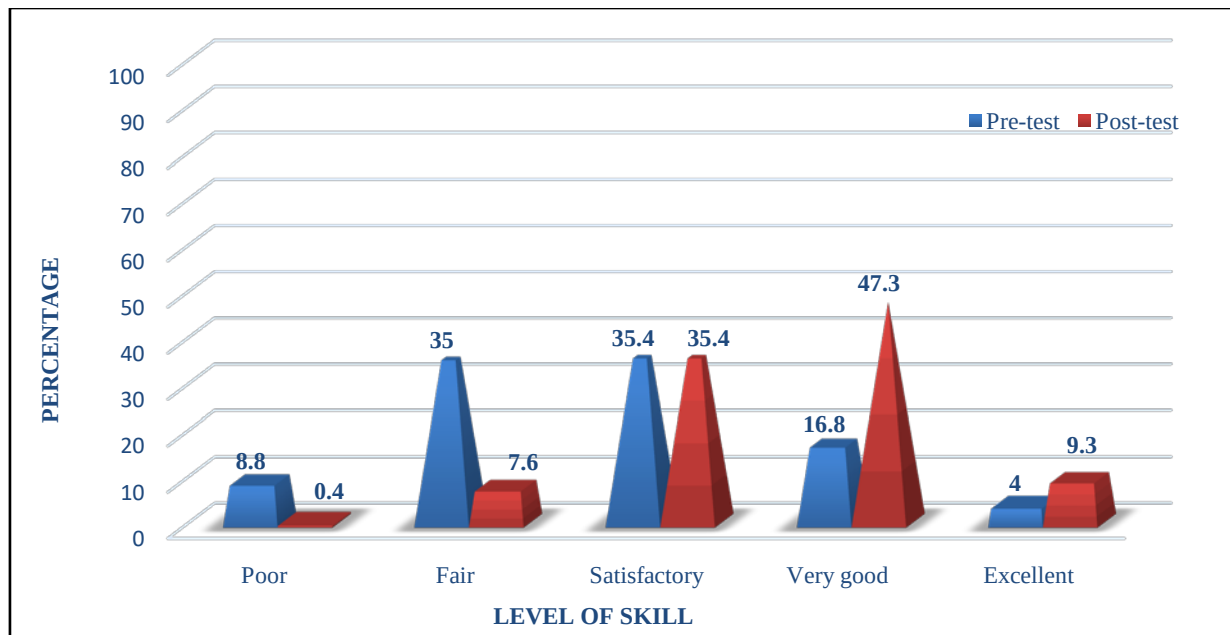


Figure 4: Distribution of pre and post-test levels of skill of staff nurses.

d) *Comparison of Pre- and Post-test Levels of Confidence of Staff Nurses*

In the pre-test, the most significant part (35.4%) of nurses had a satisfactory level of confidence, 34.1% had fair confidence, and only 5.3% had an excellent

level of confidence about nursing informatics. In post-testing, 46.5% of nurses had an excellent confidence level, 32.3% had a satisfactory level, and none scored a poor confidence level (Fig. 5).

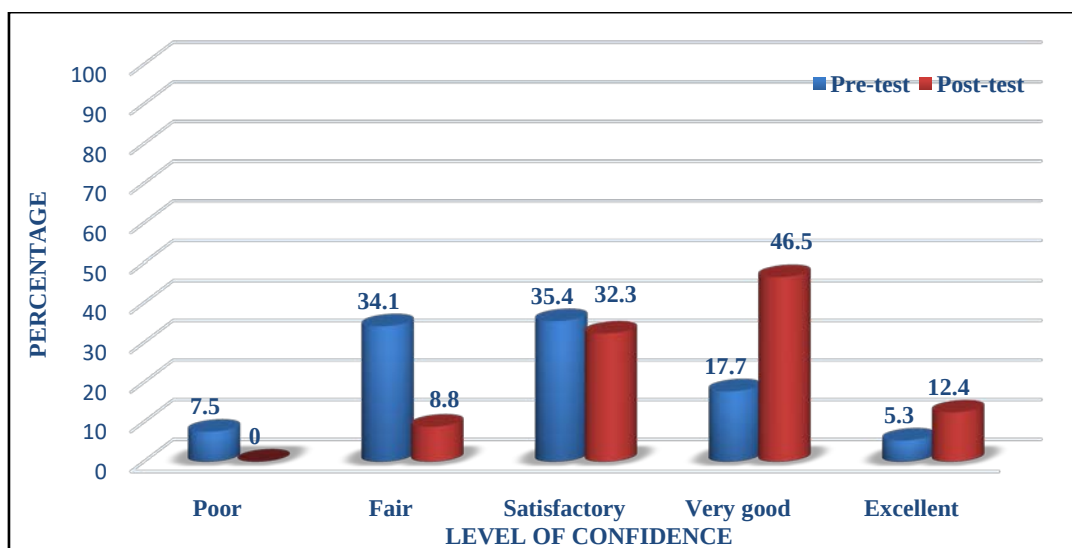


Figure 5: Percentage distribution of pre-and post-test levels of confidence of staff nurses.

e) *Effectiveness of a Structured Training Program on Nursing Informatics for Staff Nurses*

Table 3: Homogeneity of parameters among staff nurses ($n = 226$).

Variable	Mean	SD	95% Confidence Interval		Skewness	Kurtosis
			Lower Bound	Upper Bound		
Level of knowledge	8.52	3.93	8.01	9.04	0.334	-0.587
Level of skill	8.35	3.86	7.85	8.86	0.317	-0.468
Level of confidence	11.07	4.54	10.47	11.66	0.538	-0.530

Table 3 depicts the normality test of the research variables' knowledge, skills, and confidence in nursing informatics. When the results in skewness and kurtosis, more appropriate statistical tests, fall within $\pm$

3.00, the parametric tests of the t -test can be applied to find the mean difference and the Pearson's correlation coefficient to prove the relationship between variables.

Table 4: Comparison of mean levels of staff nurses' ($n=226$) knowledge of nursing informatics.

Assessment	Level of Knowledge		Mean difference	Paired T -value	p -value*
	Mean	SD			
Pre-test	8.52	3.93	4.98	27.984	<0.001
Post-test	13.50	3.14			

*Significance established at $p < 0.001$

Table 4 illustrates the mean difference in the level of knowledge of nursing informatics among staff nurses before and after training. The results reflect a significant difference (4.98) in the mean scores between the pre-test mean score of 8.52 ± 3.93 and its increase to 13.50 ± 3.14 in the post-test, which was found to be highly significant ($p < 0.001$). This significant difference between the pre and post-test results proves the intervention was effective. Hence, the null hypothesis was rejected, and the research hypothesis was accepted.

Table 5: Comparison of mean levels of staff nurses' ($n = 226$) skills in nursing informatics.

Assessment	Level of Skill		Mean difference	Paired T-value	p-value*
	Mean	SD			
Pre-test	8.35	3.86	4.91	24.463	<0.001
Post-test	13.27	2.97			

*Significance established at $p < 0.001$

Table 5 presents the mean difference in staff nurses' skill levels in nursing informatics before and after the intervention. The results show a significant difference (4.91) in the mean scores between the pre-test of 8.35 ± 3.86 and its increase to 13.27 ± 2.97 in the post-test,

which was found to be highly significant ($p < 0.001$). This significant difference between the pre-and post-test results proves the training was practical. Hence, the null hypothesis was rejected, and the research hypothesis was accepted.

Table 6: Comparison of mean level of staff nurses' ($n = 226$) confidence in nursing informatics.

Assessment	Level of Confidence		Mean difference	Paired T-value	p-value*
	Mean	SD			
Pre-test	11.07	4.54	5.94	25.608	<0.001
Post-test	17.01	3.91			

*Significance established at $p < 0.001$

Table 6 shows the mean difference in levels of confidence of staff nurses in using nursing informatics before and after training. The results show a significant difference (5.94) in the mean scores between the pre-test mean score of 11.07 ± 4.54 and its increase to

17.01 ± 3.91 in post-testing, which was considered highly significant ($p < 0.001$). This significant difference between the pre-and post-test results proves the training was effective. Hence, the null hypothesis was rejected, and the research hypothesis was accepted.

f) Comparing Staff Nurses' Knowledge, Skills, and Confidence in Nursing Informatics

Table 7: Pearson's correlation coefficient between levels of knowledge and skill.

Variable	Mean	SD	Pearson's r	p value*
Level of knowledge	8.52	3.93		
Level of skill	8.35	3.86	0.881	<0.001

*Significance established at $p < 0.001$

Table 7 shows Pearson's correlation coefficient between the levels of knowledge and skills of staff nurses. The results show a highly significant positive correlation between level of expertise and level of skills

at ' $r = 0.881$ ' ($p < 0.001$). It was evident that the two variables moved in the same direction as they increased, inferring that as knowledge increased, the level of skill followed.

Table 8: Pearson's correlation between level of knowledge and confidence ($n = 226$).

Variable	Mean	SD	Pearson's r	p value*
Level of knowledge	8.52	3.93		
Level of confidence	11.07	4.54	0.811	<0.001

*Significance established at $p < 0.001$

Table 8 shows Pearson's correlation between levels of knowledge and confidence of staff nurses. The results show a highly significant positive correlation between level of knowledge and confidence at ' $r =$

0.811 ' ($p < 0.001$). It was evident that the two variables moved in the same direction as they increased, inferring that as knowledge increased, the level of confidence followed.

Table 9: Pearson's correlation between level of skill and confidence ($n = 226$).

Variable	Mean	SD	Pearson's r	p value*
Level of skill	8.35	3.86		
Level of confidence	11.07	4.54	0.834	<0.001

*Significance established at $p < 0.001$

Table 9 shows Pearson's correlation coefficient between the levels of confidence and skills of the staff nurses. The results show a highly significant positive correlation between the level of confidence and the level

of skills at ' $r = 0.834$ ($p < 0.001$). It was evident that the two variables moved in the same direction as they increased, inferring that as the level of skill increased, the level of confidence followed.

g) *Participants' Post-test Assessment of the Benefits of Electronic Documentation*

Table 10: Staff nurses' ($n = 226$) post-test assessment of the benefits of electronic documentation.

Benefits of using electronic documentation		Frequency (f)	Percentage (%)
Saves time	Strongly Agree	75	33.2
	Agree	99	43.8
	Neutral	39	17.3
	Disagree	7	3.1
	Strongly Disagree	6	2.7
Reduces errors	Strongly Agree	44	19.5
	Agree	103	45.6
	Neutral	69	30.5
	Disagree	7	3.1
	Strongly Disagree	3	1.3
Convenient	Strongly Agree	67	29.6
	Agree	111	49.1
	Neutral	39	17.3
	Disagree	4	1.8
	Strongly Disagree	5	2.2
Improves productivity	Strongly Agree	61	27
	Agree	115	50.9
	Neutral	44	19.5
	Disagree	1	0.4
	Strongly Disagree	5	2.2
Improves care coordination	Strongly Agree	55	24.3
	Agree	109	48.2
	Neutral	55	24.3
	Disagree	3	1.4
	Strongly Disagree	4	1.8
Improves quality of care	Strongly Agree	62	27.4
	Agree	96	42.5
	Neutral	62	27.4
	Disagree	2	0.9
User friendly	Strongly Agree	51	22.6
	Agree	107	47.3
	Neutral	56	24.8
	Disagree	8	3.5
	Strongly Disagree	4	1.8

Table 10 illustrates the frequency and percentage distribution of the benefits of using electronic documentation in the view of staff nurses post-testing.

Results show that about two-thirds of the participants agreed that using electronic documentation saves time, reduces errors, is convenient, improves productivity, provides better care coordination, improves the quality of care, and is user-friendly. A limited number of staff nurses opposed this view.

Table 11: Frequency and percentage distribution of staff nurses' ($n=226$) post-test levels of satisfaction with using electronic documentation.

Level of Satisfaction	Frequency (f)	Percentage (%)
Excellent	54	23.9
Very good	103	45.6
Good	53	23.5
Fair	16	7.1
Poor	0	0

Table 11 illustrates the frequency and percentage distribution of staff nurses' reported level of satisfaction with using electronic documentation at post-test. The most significant part (45.6%) of staff nurses expressed an excellent level of satisfaction, 23.9 said it was excellent, 23.5 said it was good, with none reporting that their opinion of using electronic documentation was poor.

V. DISCUSSION

The Healthcare Transformation Program was formulated for the Kingdom's Vision 2030 project to ensure the continued development of healthcare services in Saudi Arabia and to focus efforts on this vital sector. The program aimed to boost public health and disease prevention, enhanced access to health services through optimal coverage, comprehensive and equitable geographical distribution, and increased the provision of e-health services (Vision 2030, 2016).

In line with this vision, this study aimed to evaluate the effectiveness of a structured training program of nursing informatics in the Security Forces Hospital Program, Riyadh, from the staff's perspective (using Von Bertalanffy's (1968) General System Theory), to identify correlations among the variables and to compare the benefits of using electronic documentation.

The results of the study showed that there was a highly significant ($p<0.001$) improvement in the level of knowledge, skill, and confidence, confirming that the structured training program was effective. There were also highly significant positive correlations between level of knowledge and level of skill, level of knowledge and level of confidence, and level of skill and level of confidence, indicating that improvements were closely interrelated.

There is minimal quantitative research in the literature that examines the effectiveness of nursing informatics systems. One study showed that following a nursing informatics training program, nurses showed statistically significant changes in their perception of nursing informatics and their ability to apply information technology to enhance the quality of patient care (Bickford et al., 2005). Another study demonstrated that home healthcare and health informatics training laboratories and hands-on exercises improved students' technology adoption rates and self-confidence in using wireless patient monitoring devices (Sapci & Sapci,

2017). The above studies are consistent with the results of this study.

The results of this study also showed that most participants (93%) were satisfied with using electronic documentation. About two-thirds of the participants either agreed or strongly agreed that using electronic documentation saves time, reduces errors, is convenient, improves productivity, results in better care coordination, improves quality of care, and is user-friendly. These findings are in line with the results of previous studies. Electronic documentation can improve the ability to diagnose diseases and reduce or even prevent medical errors, improving patient outcomes (Healthit, 2019). A study in 2019 affirmed the adoption of electronic health records will significantly reduce patient safety events in the hospital (Akindele, 2019). It reduces the risk of errors by decreasing the clinicians' cognitive workload and synthesizing and organizing information in accessible and usable formats (Ratanawongsa et al., 2019). Information technology benefited nurses by helping them perform their daily tasks with greater ease, and it made the nurses' work more effective as information technology improved their efficiency by reducing resource consumption and facilitating information access, recording, and processing (Yusof, 2015). Electronic documentation implementation appears to enhance documentation and prescription error prevention (Albagmi, 2021).

In this study, a limited number of the staff reported dissatisfaction with electronic documentation. One possible explanation for this is that some of the nurses may not have had any previous experience with technology as they were brought up in a non-technology era (10% of the sample were above age 50) and may be fearful of technology or reluctant to try it. According to research, the Baby Boomer generation (those born between 1946 and 1964) is resistant to change, in contrast, Generation X (Post-Boomers) (those born between 1965 and 1980) is more diverse, entrepreneurial, and educated, and Generation Y, also known as Millennials (those born between 1981 and 2000), stay glued to their phones (Kalita, 2023). Millennials were born into the world of technology. Described as "digital natives," that is, a cohort or generation that has never known a world without computers and handheld electronic devices, millennials demonstrate the ability to absorb information quickly

through technology (Jain & Dutta 2018). This explains why the majority of participants were satisfied with using electronic documentation, with nearly 90% of the nurses falling into Generation X and Generation Y (Millennials). The low percentage of nurses reporting dissatisfaction would be a contributing factor to have training courses tailored to those at different levels of experience with technology, rather than simply one training program for all.

VI. LIMITATIONS

While the study has good scientific rigor in that the methodology was systematic and transparent through complete, organized, and accurate reporting, the study sample was taken from only one hospital and specialty; therefore, the results may not be generalizable. Future studies should include more than one hospital and more than one specialty, such as physicians, pharmacists, laboratory technicians, and others, so that the results are more generalizable.

Another limitation is that there may be response bias in the survey results, as there is an assumption of truthfulness when, nurses may not have been truthful; they may have feared that their responses would impact their jobs. An alternative would be to repeat the study with one-to-one face to face structured interviews rather than a written survey for data collection. Structured interviews can reduce response bias as the questions can be open-ended, and detailed information can additionally be applied.

Future research should involve a follow-up study after 12 to 18 months to identify challenges encountered and explore the patient experience following the implementation of electronic documentation. To improve the electronic documentation system itself, further research must follow. Nurses need to be involved in the initial design of strategies to improve the quality of healthcare and change their culture in this regard (Darvish et al., 2019).

VII. IMPLICATIONS

The results of this study can inspire institutions that have not yet implemented electronic documentation to do so, by recognizing the benefits of electronic systems.

It can also help universities implement nursing informatics into undergraduate training programs and encourage nursing education departments to recognize the need to implement nursing informatics into their education programs further, for example, transforming nursing competency reviews from paper to electronic assessments. Due to advanced technology, advantage should be taken in information technology in nursing practice and the quality of healthcare which will empower nurses and, further educational adaptation is

recommended for nursing informatics (Darvish et al., 2014).

VIII. CONCLUSION

The study aimed to evaluate the effectiveness of a structured training program for nursing informatics in the Security Forces Hospital, Riyadh. The results demonstrate that the structured training program was effective. Implementation of electronic documentation systems improves documentation, with most nurses pleased with it. The results suggest that nurse managers, decision-makers, nurse educators, and authorities in clinical settings should organize appropriate interventions and training programs with the help of informatics specialists to improve nurses' informatics competency, particularly in the field of information management skills (Jouparinejad et al., 2018).

The transformation to electronic documentation was highly effective and beneficial to the nursing process, which in turn positively impacts the quality of care.

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Disclosure

The authors report no conflicts of interest in this work

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Rethinking a Trajectory in the World of Healing and Care: Be Born, Live and Die

By Profa Dra Mara Villas Boas De Carvalho

Introdução- A comunicação é um espaço em que envolve a compaixão, a empatia, a solidariedade e interação diante de um paciente que se encontra à deriva entre o nascer, o viver e o processo de finitude. Todo Ser Existencial, se questiona e quer entender, como é esse processo existencial, um corpo, uma matéria viva, e que de um momento para outro, tornar-se-á pó, onde, o corpo é processado pelo tempo, ou seja, um tempo que tem um fim, um tempo imprevisível.

Minhas inquietações diante da ação da arte do curar e cuidar, em face do processo de morrer, surgiram durante o curso de graduação, quando iniciei as atividades em campo de estágio.

Já nessa época eu considerava deficiente a abordagem relacionada ao tema da comunicação “a morte e o morrer” pela perspectiva teórico-prática.

GJMR-K Classification: NLMC Code: WB 310



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Rethinking a Trajectory in the World of Healing and Care: Be Born, Live and Die

Repensando Uma Trajetória no Mundo do Curar E do Cuidar: Nascer, Viver E Morrer

Profa Dra Mara Villas Boas De Carvalho

INTRODUÇÃO

A comunicação é um espaço em que envolve a compaixão, a empatia, a solidariedade e interação diante de um paciente que se encontra à deriva entre o nascer, o viver e o processo de finitude. Todo Ser Existencial, se questiona e quer entender, como é esse processo existencial, um corpo, uma matéria viva, e que de um momento para outro, tornar-se-á pó, onde, o corpo é processado pelo tempo, ou seja, um tempo que tem um fim, um tempo imprevisível.

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Já nessa época eu considerava deficiente a abordagem relacionada ao tema da comunicação “a morte e o morrer” pela perspectiva teórico-prática.

Vale acrescentar que, nesse período, encontrava-me em uma etapa de maturidade distinta dos padrões dos jovens universitários, pois, além de estudante, já era esposa, dona de casa e mãe de duas filhas em idade escolar.

Minhas inquietações iniciaram-se nas vivências no campo de estágio, onde inúmeros questionamentos faziam-se presentes com relação à teoria recebida em sala de aula e à ação da prática, especialmente quando se tratava da pessoa doente no processo de morrer. Observava que, desde os espaços físicos disponíveis no hospital, havia uma inadequação para o atendimento a essas pessoas que, ora estavam isolados em quartos afastados, tidos como “leitos de morte”, ora estavam em quartos coletivos, separados um dos outros por biombos.

Várias foram as ocasiões nas quais solicitei ajuda aos meus professores para obter uma aproximação mais direta com os pacientes na fase avançada da doença, no que, infelizmente, não era atendida na perspectiva da minha necessidade, o que sempre me causou estranheza e inconformismo.

No sentido de chegar-me a eles, ou seja, de aproximar-me dos pacientes com doença neoplásica maligna, progressiva e irreversível, apresentava-me

para a equipe médica da oncologia como discente do curso de Graduação em Enfermagem, acompanhando as visitas clínicas diárias como um meio para suprir minha necessidade de criar perspectivas de conhecimento para um atendimento humanizado.

Para minha gratificação pessoal e profissional, obtive destes profissionais acolhimento, o que me deu a oportunidade ímpar de empreender os primeiros passos na prática da enfermagem tendo em vista pacientes com diagnóstico de câncer.

Daquela época aos dias atuais, vem me chamando atenção o fato de o paciente hospitalizado, já no fim de existência, permanecer isolado em seu leito, distante do que lhe é precioso, como a própria casa, seus objetos pessoais, seus sonhos e seus familiares, visto que estes somente podem visitá-lo em dias e horários pré-estabelecidos pela instituição. Não bastassem todas estas privações, os cuidados prestados pelos profissionais de saúde nesse momento, segundo minha ótica, são ainda hoje bastante limitados, na medida em que são centrados em procedimentos técnicos.

Neste contexto, estabeleci metas pessoais e profissionais para possibilitar visitas diárias aos enfermos. Essas visitas concretizaram-se por meio de uma vontade compromissada na relação com os mesmos.

Gradativamente, fui me inserindo na equipe médica e de enfermagem, conquistando sua confiança e cooperação, inteirando-me cada vez mais das etapas do tratamento, das fases da doença e das características do paciente oncológico.

Por meio das leituras e estudos de obras especializadas, fui adquirindo conhecimentos técnico-científicos sobre o câncer, os sintomas, as drogas, seus efeitos colaterais, os analgésicos administrados para o controle da dor, a sedação do paciente agonizante e sua dimensão biopsicossocial e espiritual. Enfim, à medida que aprendia, mais sentia-me compromissada com a construção de um embasamento mais sólido, que me possibilitasse abrir novos horizontes aos cuidados que prestava.

Dentre as situações vivenciadas no cotidiano hospitalar, a situação de afastamento que existe entre os pacientes, seus familiares e os profissionais de

saúde, particularmente os médicos e os enfermeiros, inquietava-me de forma particular. Notava uma tendência à rotina, à burocracia e o cuidar do doente parecia ser casual, distante, mecanicista, restrito a um conjunto de procedimentos, meios e modos de fazer que se repetiam.

Nesta trajetória, ainda na qualidade de acadêmica, sentia também necessidade de aprofundar-me na temática do processo da morte e da finitude.

Paralelamente, durante meu processo de formação acadêmica desenvolvi alguns estudos em nível de iniciação científica, mantendo essa linha de interesse. Um dos estudos versou sobre a morte e o morrer, com o objetivo da preparação dos futuros profissionais de Enfermagem. Os resultados mostraram que esta temática é abordada de forma superficial e que os acadêmicos recebem conteúdos para garantir-lhes condições de preparo mais técnico do que emocional e/ou espiritual.

Outro estudo realizado, agora na forma de trabalho de conclusão de curso, visou a conhecer o preparo que os professores de Enfermagem do ciclo profissionalizante de um curso de graduação nessa disciplina tinham para orientar alunos que assistem pacientes em processo final de doença. Esta pesquisa revelou uma tendência de os professores transmitirem orientação voltada prioritariamente à esfera técnica, o que deixava os estudantes despreparados para uma orientação espiritual e emocional, sempre necessária no caso. Este estudo mostrou também que havia limites para a ação educativa do professor da área clínica, o que contribuía, de alguma forma, para a reprodução dessa atitude no processo de morrer, restringindo as possibilidades de uma ação diligente, zelosa, mais humanizante.

Deste modo, já naquela época, pensava em fazer algo em favor dos doentes que convalesciam de uma doença crônico-degenerativa: o câncer, bem como estabelecer novos procedimentos de atendimento a seus familiares, ávidos por informações e carentes de esclarecimentos sobre suas dúvidas em relação à doença e suas complicações.

Essa caminhada direcionou meu olhar para o mundo da pessoa com câncer, mundo esse que inclui seus familiares, os profissionais de saúde, particularmente o médico e o enfermeiro. Pude ir construindo parcerias que acentuaram a minha percepção, realçando a necessidade de aquisição de novos conhecimentos e o estabelecimento de práticas diferenciadas de intervenções técnicas, em conciliação harmoniosa com o sentimento de acolhimento humanizado, com o exercício do cuidar zeloso e da solicitude. A vivência no ambiente hospitalar despertou em mim reflexões que redimensionaram meus conceitos de assistência, do cuidar e do relacionar-me com enfermos, os familiares e com a equipe dedicada ao tratamento.

Habitar esse mundo aproximou-me dos pacientes oncológicos, possibilitando competências para a ação e a intervenção do cuidar. Como a maioria dos estudantes e profissionais em campo, eu tinha muita insegurança, medo de errar, e, errando, provocar mais sofrimento ao doente. Sensível, porém, à necessidade dos mesmos, assumi a postura de incluir em minha trajetória de formação na área, a experiência do convívio com estes pacientes.

Viver as experiências de aprendizagem, refletir e poder compartilhar muitas vezes meus sentimentos com os pacientes, proporcionou-me crescimento pessoal e profissional, resignificando o ato de curar e de cuidar. Comecei a perceber os doentes como pessoas, com uma memória, uma história de vida, da qual fazem parte o passado, o presente e as difíceis perspectivas futuras permeadas por angústias, medos, e interrogações insondáveis. Deixei de vê-los como corpo-objeto, entregues às mãos da ciência médica. Passei a percebê-los, também, como meus mestres, pois sempre tinham algo importante a me dizer, a ensinar-me. Passei a entendê-los como seres humanos, que realmente são, e que, na situação de pacientes, dependem, propõem, solicitam, agem e reagem, e, ainda, que, a despeito de todas as circunstâncias a que estão sujeitos, sonham e sentem a necessidade de organizar suas vidas, embora, quase sempre, seja a última vez que o fazem ou tentam fazê-lo.

A cada visita, eu atentava a tudo que cercava o paciente, bem como à sua família. Centrava-me naquilo que falávamos e nas coisas que eram ou poderiam ser importantes para eles todos. Ao estar-com o paciente e próxima a seu leito, tornava-me atenta à sua linguagem facial, corporal e do silêncio. Podia entender suas alterações, perceber, por meio de situações não verbalizadas, se seu humor estava alterado em decorrência da dor, da tristeza, da revolta, entre outros fatores, ou, até mesmo, por algo que o impossibilitava de se comunicar, como a dificuldade de respirar, a intensidade da dor, a vergonha ou qualquer outro detalhe pertinente.

Este período foi, portanto, transformador e rico de experiências gratificantes que forjaram minhas convicções e traçaram, embrionariamente, meus objetivos.

Uma vez graduada em Enfermagem, realizei concurso em caráter de provimento temporário para o ingresso na docência em uma universidade particular, vindo a ser aprovada.

Embora houvesse falta de experiência profissional, fui guiada pelo programa das disciplinas, atuando com muito entusiasmo, tendo como norte uma assistência integralizada, permeada por princípios éticos e humanísticos. Fui em busca de conteúdos que extrapolassem o caráter tecnicista, procurando despertar nos acadêmicos a responsabilidade de sua

atuação voltada para uma assistência mais humanizada.

Naquela época, realizei outro estudo que mostrou a importância de se introduzir, no currículo de graduação em Enfermagem, o estudo da Tanatologia¹ e a abordagem humanística, com a abordagem dos cuidados paliativos para a formação do futuro profissional.

Esse estudo buscou não só despertar, mas, também, levar o aluno a desenvolver um compromisso no exercício de suas atividades com os pacientes quando a doença ameaça a vida numa perspectiva mais humanizada, menos tecnicista, visando a minimizar a descaracterização do paciente no processo final de vida e proporcionar, ainda na graduação, uma vivência diferenciada ao acadêmico no que diz respeito a questões relacionadas a tais pacientes.

Em seguida, ingressei no Programa de Pós-Graduação – Nível Mestrado na área de Educação. A opção por essa área visou, dentre outros objetivos pessoais, a ampliar meus conhecimentos nas ações do educar para a saúde.

Assim, fundamentada teoricamente no referencial da educação, decidi aprofundar-me em estudos sobre a preparação para a nossa própria morte e para a dos outros, consolidando minha relação de interesse com a Tanatologia e cuidados paliativos.

As considerações mencionadas mostram, de maneira sucinta, como se deu a minha inserção no trabalho com pacientes quando a doença ameaça a vida e, na convivência diária com doentes acometidos pelo câncer, com seus familiares e com a equipe de saúde.

Após esta experiência na área docente, optei por permanecer com o trabalho de caráter voluntário com pacientes fora de possibilidade de qualquer recurso de cura clínica e/ou cirúrgica em uma instituição hospitalar vinculada a uma universidade particular, na qual venho atuando desde minha formação na graduação, conforme já relatado. Esta opção pelo voluntariado tem permitido um transgredir do modelo assistencial vigente, no qual a dimensão técnica é altamente valorizada, preterindo outras dimensões tanto ou mais importantes, como a emocional, espiritual e, ainda, a de suporte familiar. Dessa forma, esta opção proporciona-me dedicar mais tempo aos pacientes, vale dizer, o tempo que for necessário para ajudá-los a enfrentar distintas fases de tratamento, entender as dificuldades que estão experienciando durante a internação e compreender as várias formas de

expressão de seus sentimentos como o medo, a revolta, a angústia, a depressão.

Esta forma de cuidar do paciente oncológico, entendendo-se que seu sofrimento é genérico, tem-me dado a oportunidade de acesso ao seu espaço existencial durante todo o tratamento, cujo resultado pode ser a evolução para a cura ou, muitas vezes, para o enfrentamento da terminalidade. Trata-se de uma proposta de cuidado capaz de respeitar o enfermo e, ao mesmo tempo, dar-lhe qualidade de vida, durante o tempo que lhe resta viver, oferecendo-lhe tratamento adequado e escuta suficientemente aberta e respeitosa, capaz de possibilitar-lhe entrar vivo na morte, de forma digna.

A assistência prestada por mim é baseada nos princípios filosóficos do programa de cuidados paliativos e dor, do qual procuro extrair a lição de que se pode aliar a competência técnica à qualidade de assistência mais humanizada. Não se trata, de modo algum, de rejeitar tudo o que nos é proporcionado pela tecnologia ou pela ciência, mas, complementarmente, acrescentar-lhe uma dimensão humana, com qualidade de vida que pode ser representada pelos sentimentos do amor, da paciência, da caridade, da compaixão, e da empatia. São modalidades de relações que se estabelecem e que são intrínsecas à natureza da pessoa.

É importante, no entanto, não apenas considerar o número de sobreviventes e tempo de sobrevida, mas, também, os aspectos emocionais, funcionais, sociais e psicológicos da existência humana, para poder alcançar maior qualidade na assistência. A prática efetiva desta modalidade de assistência permite-me interagir com outros profissionais de saúde, como o terapeuta ocupacional, a assistente social, psicólogo, fisioterapeuta, nutrólogo entre outros, para que possam também atuar com os pacientes.

Os profissionais de Enfermagem são os que mais tempo permanecem junto do paciente e também dos familiares, constituindo-se em verdadeiro elo, com potencial para promover a interação de todos os envolvidos e buscar por recursos que possibilitem ao paciente melhor qualidade de vida.

É assim que, como enfermeira, sempre fui acolhida no referido hospital, atuando como parte integrante de uma equipe interprofissional para esta assistência que, entre outros benefícios alcançados, tem facilitado a adesão do paciente ao tratamento, assim como tem ampliado a comunicação entre o doente, a família e a equipe interprofissional.

Atuar dessa forma tem-me permitido ir ao encontro do outro, tão profundamente quanto possível, bem como penetrar-lhe no âmago e avaliar suas preocupações, para, desta forma, permitir-lhe encontrar suas próprias respostas.

¹ Tanatologia é uma palavra que vem do grego (Thánatos-Morte; Logos-Tratado) e significa "estudo da morte". Este estudo é, porém, muito mais abrangente, pois procura englobar todos os fatos que se relacionam direta ou indiretamente com a morte, interligando-os em busca de uma melhor compreensão deste acontecimento inegável para o homem.

A integração que realizo com a família tem sido necessária e nossa proposta é mantê-la inserida no processo de acompanhamento ao seu familiar no período de internação. Tenho procurado, ao longo desses anos, romper com a rigidez das regras definidas para visitas, de tal maneira que estas possam chegar a qualquer hora, que possam ser acolhidas pelo serviço, tendo possibilidade de receber a atenção do profissional, especialmente nos momentos de suas angústias, de seus questionamentos e tensões. É, portanto, a entidade doente-família que é acompanhada, até mesmo com visitas domiciliares que realizo, quando da alta hospitalar ou, então, quando a opção do paciente seja por permanecer em casa até seus últimos dias.

Além da assistência a pacientes oncológicos, exerço também atividades de consultorias, assessorias e assistências em instituições hospitalares, escolares e outras, por meio de um centro de estudos em Tanatologia, com o objetivo de promover o desenvolvimento de estudos e de pesquisas relacionados à área da ciência referida, oferecendo atendimento clínico multidisciplinar para recuperar e ressignificar o viver.

É importante que os profissionais da área de saúde que convivem com situações ligadas à morte e às pessoas que estão morrendo, sensibilizem-se diante da perda e do enlutamento. Essa preocupação vem sendo discutida com a equipe como forma de aprendizado e complementada com cursos, grupos de estudos e workshops.

O que viabiliza este trabalho é a convivência diária com pacientes oncológicos, ou não, que estão em tratamento terapêutico, ou quando a doença ameaça a vida, hospitalizados ou em seus domicílios. Por meio do relacionamento interpessoal do cuidado humano é que me disponho a perceber o outro, no momento presente, em processo de transformação, cujos objetivos apontam para uma única direção: promover a qualidade de vida enquanto existir vida.

Disponibilizo minha atuação numa assistência que me permite, por meio da ação do cuidado de enfermagem, obter conhecimentos importantes sobre a experiência de morrer e a enfrentar as solicitações do que uma pessoa precisa para transpor o tratamento e ou o processo de morrer.

FALANDO DO CUIDAR

O cuidado é uma parte integrante da vida. Nenhum ser humano é capaz de sobreviver sem cuidado. Historicamente, o homem sempre teve a necessidade de ser cuidado, desde seu nascimento até seus instantes finais, estendendo também os cuidados a tudo o que contribui para sua sobrevivência, como o provimento de seu alimento, a água, o abrigo, entre outras necessidades.

Dentre todos os animais, o homem é o que tem menores condições de sobrevivência sem cuidados, quando nasce. É o mais frágil de todos eles. Neste sentido, o vir ao mundo (nascer) coloca-nos, de imediato, diante da possibilidade do morrer, caso não se cumpra a condição essencial, isto é, a arte do cuidar.

Cuidar é, portanto, elemento essencial dos fenômenos envolvidos nas relações que se estabelecem entre viver e morrer. Para o humano, esse cuidar envolve outras dimensões, em relação a outros animais. É um cuidar que se reveste de múltiplos aspectos que não só a provisão material.

Leloup (2001) considera que o cuidar abrange, além do corpo (alimento e vestuário), o cuidar da psyche, das imagens e dos arquétipos que o animam, cuidar do seu desejo e da orientação que se lhe daria, cuidar do outro pela oração. Importa, agora, cuidar do ser. É o mesmo que dizer que devemos “cuidar” particularmente daquilo que não é doentio nem mortal em nós. Assim, o olhar do terapeuta não está voltado em primeiro lugar para a doença ou para o doente, mas para aquilo que se acha fora do alcance da doença e da morte nele.

Pela expansão da vida humana sobre o planeta, acabamos por constatar a enorme interdependência de cada cidadão, fato comprovado pela globalização e rapidez de circulação das informações, produtos e pessoas. Se, durante a vida, cada um não fizer com cuidado tudo o que empreender, acabará por prejudicar a si mesmo e por destruir o que estiver à sua volta. O cuidado entra na natureza e na constituição do ser humano (Boff, 1999).

Sem o cuidado, recebido ou doado, o homem deixa de experimentar sua humanidade e, se buscar construir sua vida em isolamento, verá que estará fadado ao fracasso absoluto, pois, existindo realisticamente tamanha interdependência entre todos, menosprezá-la pode levar à perda do sentido holístico da vida. A pessoa que vive esta situação pode acabar por morrer física ou psicologicamente (Boff, 1999).

O cuidado é algo que deve ser entendido muito além de um simples ato, por consolidar uma atitude revestida de significância e significado.

Conforme Waldow (1998), o cuidado ativa um comportamento de compaixão, de solidariedade, de ajuda no sentido de promover o bem. Neste sentido, os profissionais de saúde que visam o bem-estar do paciente, a sua integridade moral e a sua dignidade como pessoa devem possuir intencionalidade no ato de cuidar.

Um novo caminho dentro da enfermagem é trazido por Mayeroff (1990), no qual articula-se o conceito de cuidado no sentido relacional, enfocando-o do ponto de vista existencial filosófico. O autor afirma que o cuidar é um compromisso que a pessoa assume com o outro. Num processo que ajuda o outro a

crescer, a ideia é que esse ser venha a cuidar também de algo ou de alguém, assim como de si mesmo. Ao experienciar o outro ou a uma ideia, não há dominação ou manipulação, apenas confiança.

Segundo Mayeroff (1990)... “para cuidar de outra pessoa, devo ser capaz de entendê-la e ao seu mundo como se estivesse dentro deste... Devo ser capaz de estar com ela em seu mundo, ‘entrar’ nesse mundo, para sentir de ‘dentro’ como é a vida para ela, o que se esforça para ser, e do que precisa para crescer”.

Conforme referido por Buber (1987), o ser humano distingue-se por sua relação com os outros seres e/ou objetos. A relação com outro ser humano é um estado em que um reconhece o outro como sujeito e com ele se importa.

A obra *Eu-Tu*, de Martin Buber, é inexoravelmente unida à vida, na qual a reflexão e ação (logos e práxis) estão intimamente relacionadas. A reflexão e ação do cuidado humano concerne ao relacionamento *Eu-Tu*, *Eu-Isso*.

Buber deu o nome de “*Eu-Tu*” à relação em que as decisões são todas compartilhadas. É importante notar que a inter-relação, possibilitada pelo compartilhar das decisões, exercida entre seres humanos que pensam, sentem, decidem, percebem, que têm crenças e valores que lhes são próprios, que interagem com o ambiente, desempenhando nele os seus papéis, de forma integral, estão, na verdade, estabelecendo padrões de cuidados, geralmente mútuos, não dominantes ou dominados.

Na reflexão sobre o mundo do “*Eu-Isso*”, verificamos a imposição pelo poder, pela força, simbólica ou não, porque o desejo do cuidador é o de manipular o outro, muitas vezes transformá-lo em objeto, em campo de experimentação. O que recebe o cuidado não pode ser utilizado como ferramenta para os propósitos do cuidador. É frequente, no entanto, as relações se darem de forma impessoal, em que o cuidador desempenha seu trabalho de forma correta, eficiente, porém apenas em observância ao aspecto técnico. Os procedimentos são realizados em um corpo qualquer, impessoal, destituído de espírito, de alma. Esse tipo de relacionamento caracteriza-se pela relação pessoa-objeto. No mundo do “*Eu-Tu*”, o exercício do poder nunca é utilizado porque o “meu” desejo é acolher dentro de “mim” a pessoa (ou objeto) à minha frente.

Boff (1999), tratando da questão do cuidar, diz ser esta ação mais que um ato, afirmando que é uma atitude que abrange mais que um momento de atenção, de zelo e de desvelo, representando, sim, uma atitude de ocupação, preocupação, de responsabilização e de envolvimento afetivo com o outro, algo transcendental, supranatural.

Estudos como o de Waldow (1998) referem que o cuidar envolve verdadeiramente uma ação interativa.

Essa ação e comportamento estão centrados em valores e no conhecimento do ser que cuida para o ser que é cuidado e que passa também a ser cuidador, quando possível.

Outro aspecto que complementa a ideia no processo de cuidar, evidenciado por Boff (1999) e que fortalece a decisão de escolha do tema deste estudo é a proteção materna instintiva, considerada por historiadores e antropólogos, como a primeira forma de manifestação do homem no cuidado dos seus semelhantes.

O modo-de-ser-cuidado revela a dimensão do feminino na mulher, por sua própria natureza, mas também evidencia no homem semelhante qualidade. Devemos lembrar que o feminino esteve sempre presente na história. As mulheres, por sua condição procriativa, cuidadora, portanto, dentre outras qualidades, em muitas civilizações detinham a hegemonia histórico-social e davam ao feminino uma expressão tão profunda que ficou gravada na memória permanente da humanidade por meio de grandes símbolos, sonhos e arquétipos presentes na cultura e no inconsciente coletivo.

Desta forma, Waldow (1998) considera que, por meio do cuidar, as mulheres expressam uma forma de relação com o mundo. Ao pensar o cuidado humano como uma forma de estar, de ser e de se relacionar, as mulheres, inquestionavelmente, podem ser consideradas cuidadoras, por excelência.

Segundo o entendimento de Boff (1999), o cuidado somente surge quando a existência de alguém tem importância para o cuidador, passando, então, a dedicar-se à pessoa cuidada, dispondo-se a participar de seu destino, de suas buscas, de seus sofrimentos e de seus sucessos, enfim, de sua vida. Assim, o cuidado passa pelo desvelo, solicitude, diligência, zelo, atenção e bom trato para com o outro.

Para Silva (2000), o ato de cuidar deve ser assumido de forma equilibrada e harmônica, emprestando a todas as situações envolvidas a mesma atenção e responsabilidade. O tempo que se dedica ao paciente deixa de ser o mais importante, desde que se possa transformar a assistência oferecida em atitude de qualidade, intensa e honesta, capaz de auxiliar verdadeiramente aquele de quem se está cuidando.

Waldow (1995) lembra que cuidar/cuidado requer, ainda, a análise e a compreensão do significado das ações humanas e dos valores que determinam as escolhas humanas na saúde e na doença. Refere também que certas necessidades humanas incluem aceitar o outro não só como ele é, mas como ele virá a ser, incluindo também o meio ambiente, responsável pelo desenvolvimento ou degradação do potencial humano.

O Significado Do Cuidar No Processo De Morrer Na Voz Das Mulheres

O cuidado, como ato, é amplo e abarca em seu sentido todos os sentimentos que temos como pessoas. Para cuidar é necessário empenho e disposição. De uma forma geral, a finalidade de cuidar na enfermagem é, prioritariamente, aliviar o sofrimento humano, manter a dignidade e facilitar meios para manejar com as crises e com as experiências do viver e do morrer (Leopardi, 1999).

Desta forma, o profissional de saúde deve ser o canal facilitador da escuta de uma forma sensível, seja ela qual for, e sempre percebê-la como eco de uma voz mais silenciosa e mais alta. É poder transmitir à pessoa enferma que somos merecedores de confiança, que estamos seguros e somos consistentes.

Tendo em vista, portanto, toda essa minha longa e gratificante vivência, cuidando de mulheres com câncer, posso dizer, agora, com o desvelamento de uma das facetas deste fenômeno, que é imprescindível ouvir com frequência as confidências das mulheres. Estas não têm só medo da morte, mas temem ainda o sofrimento relacionado ao processo de morrer. Isso ocorre especialmente quando esta experiência é marcada pela intervenção mutilante, impotência física ou pela dor.

A dor é o que existe de mais terrível na experiência humana e fato que tão frequentemente acompanha a evolução da doença oncológica, trazendo ameaça à integridade pessoal e rompendo perspectivas futuras.

É preciso que o profissional da área de saúde desenvolva a sensibilidade necessária, colocando em prática os fundamentos humanitários de sua formação acadêmica, de sua trajetória pessoal, como indispensáveis à percepção e contenção do sofrimento que vivencia a mulher no processo de morrer.

Terminado este artigo, o significado do cuidar na voz das mulheres, reporto-me novamente à fala que desvela, de forma autêntica o fenômeno que estava velado no início deste estudo:

Aproximaria mais do paciente, ficaria mais tempo ao seu lado, tentaria ouvi-lo mais. Prestava mais atenção naquilo que ele está querendo dizer, ou seja, talvez naquilo que ele quer dizer, mas, não está conseguindo. Daria mais oportunidade para ele exteriorizar a sua dor, o deixaria chorar os seus medos, chorar as injustiças, chorar seu sofrimento.(d-11)

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ANALYSIS OF THE SENSORY PROCESSING PROFILE OF STUDENTS WITH AUTISTIC SPECTRUM DISORDER AND ITS INFLUENCE ON SCHOOL PARTICIPATION

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Analysis of the Sensory Processing Profile of Students with Autistic Spectrum Disorder and its Influence on School Participation

Análise Do Perfil De Processamento Sensorial De Alunos Com Transtorno Do Espectro Autista E A Sua Influência Na Participação Escolar

Mirela Moreno Almeida de Andrade ^α & Rita De Cassia Tibério Araújo ^σ

1. INTRODUÇÃO

O Transtorno do Espectro Autista (TEA) tem sido estudado e descrito há muitos anos, por vários pesquisadores, ao redor do mundo. Suas descrições e terminologias sofreram modificações importantes até chegarem à descrição mais atualizada, que foi publicada pelo Manual Diagnóstico e Estatístico dos Transtornos Mentais DSM-5 e, portanto, será o principal referencial teórico adotado neste estudo (AMERICAN PSYCHIATRIC ASSOCIATION, 2014).

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Apesar de os sintomas estarem presentes desde o início do período de desenvolvimento infantil, eles podem não se tornar completamente evidentes, até que as demandas sociais ultrapassem as capacidades da criança, ou podem ser disfarçados por estratégias aprendidas (AMERICAN PSYCHIATRIC ASSOCIATION, 2014).

Sua apresentação fenotípica é bastante heterogênea, além de haver uma clara prevalência para o gênero masculino, com relação ao gênero feminino (4/1) (JESTE; GESCHUWIND, 2014).

A manifestação clínica se dá de diferentes formas, em cada indivíduo (LAI; LOMBARDO; BARON-COHEN, 2014), podendo surgir uma ou mais comorbidades associadas, como a deficiência intelectual, em 70% dos casos, o transtorno do déficit de atenção, em 30%, a depressão, em 2 a 30%, a ansiedade, de 5 a 45 %, a epilepsia, de 7 a 46% dos casos (SIMONOFF *et al.*, 2008; LO-CASTRO; CURATOLO, 2013; LEYFER *et al.*, 2006; MATSON; NEBEL; MATSON, 2007).

A gravidade varia de acordo com o comprometimento do indivíduo, de modo que o TEA pode ser classificado em três níveis (AMERICAN PSYCHIATRIC ASSOCIATION, 2014):

- Nível um: necessita de apoio com prejuízo funcional notado sem suporte; demonstra dificuldade em iniciar interações sociais, respostas atípicas ou não sucedidas para abertura social; interesse diminuído nas interações sociais; falência na conversação; tentativas de fazer amigos de forma estranha e mal sucedida. O seu comportamento interfere significativamente com a função; apresenta dificuldade para trocar de atividades; independência limitada por problemas com organização e planejamento.
- Nível dois: precisa de apoio substancial com déficits evidentes na conversação; prejuízos aparentes, mesmo com suporte; iniciação limitada nas interações sociais; resposta anormal/ reduzida a aberturas sociais. Comportamentos suficientemente frequentes, sendo óbvios para observadores casuais; o comportamento interfere com função, numa grande variedade de ambientes; aflição e/ou dificuldade para mudar o foco ou ação.
- Nível três: requer muito apoio substancial, exibe prejuízos graves no funcionamento; iniciação de interações sociais muito limitadas; resposta mínima a aberturas sociais. O seu comportamento interfere marcadamente com função em todas as esferas; dificuldade extrema de lidar com mudanças; grande aflição/dificuldade de mudar o foco ou ação.

No que se refere ao processamento sensorial de pessoas com TEA, já os primeiros estudiosos que descreveram as características do Transtorno do Espectro Autista relataram comportamentos relacionados aos estímulos sensoriais que se diferenciavam dos observados em indivíduos com desenvolvimento típico, como, por exemplo, fascínio por estímulos luminosos, sensibilidade excessiva ao som, interesse excessivo pelos objetos em

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movimento, hipo e hiper-reatividade táteis e insensibilidade à dor (ORNITZ, 1974; WING, 1969; DAHLGREN; GILLBERG, 1989; RAPIN, 1991).

Posteriormente, à medida que os estudos a respeito do TEA avançaram, outras pesquisas ligadas às características sensoriais do transtorno e à compreensão do impacto que esses comportamentos têm, no cotidiano dos indivíduos com TEA, foram desenvolvidas, nas quais ficaram evidenciadas as relações entre as respostas sensoriais inadequadas e problemas nas habilidades adaptativas, engajamento social, desempenho acadêmico e desempenho das habilidades da vida diária, comportamento alimentar, o brincar e habilidades motoras (ROGERS; HEPBURN; WEHNER, 2003; HILTON; GRAVER; LAVESSER, 2007; PFEIFFER *et al.*, 2005; PARHAM, 1998; CERMAK; CURTIN; BANDINI, 2010; LEEKAM *et al.*, 2007; SPITZER, 2003; AYRES, 1987).

De acordo com o DSM5 (APA, 2014), 90% dos indivíduos com TEA podem exibir disfunções de integração sensorial, nas quais os padrões de hiper ou hiporreatividade a estímulos sensoriais ou interesse incomum por aspectos sensoriais do ambiente estão presentes. Desse modo, podem manifestar indiferença aparente à dor e temperatura, reações contrárias a sons e texturas específicas, cheirar ou tocar os objetos de maneira excessiva, mostrar fascinação por luzes e/ou movimento (DONALD; BLACK 2015). Essa condição é muito variável de indivíduo para indivíduo, podendo transitar pela hiper-reatividade, hiporreatividade ou disfunção mista, a qual combina as duas condições para diferentes estímulos, causando impacto significativo nas interações sociais, autonomia nas atividades de vida diária e participação escolar.

Tais disfunções de integração sensorial percebidas nos indivíduos com TEA já haviam sido descritas por Ayres (1979), ao reconhecer que havia respostas hiper ou hiporreativas aos estímulos sensoriais provenientes do próprio corpo ou do ambiente. No entanto, suas observações avançaram para além dos aspectos descritos no DSM-5 e, conforme a autora, essas crianças também apresentam problemas no registro (detecção e interpretação), na modulação (inibição ou propagação do estímulo), na motivação intrínseca e na praxia.

Estudos posteriores, os quais investigaram as disfunções sensoriais no TEA e suas respostas à intervenção com a Abordagem de Integração Sensorial de Ayres®, sugeriram que os indivíduos com hiper-reatividade (um distúrbio de modulação) tiveram bons resultados com a intervenção, concluindo que crianças com bons registros da entrada sensorial respondem melhor à terapia do que as que têm pobre registro (AYRES; TICKLE, 1980). Segundo os autores, os principais sistemas neurais associados ao registro e modulação são o límbico, o vestibular e o proprioceptivo.

As pesquisas da última década, atinentes ao Transtorno do Espectro Autista e disfunção de integração sensorial, como uma característica diagnóstica, confirmam a afirmação de Jean Ayres, ao reconhecer que regiões de processamento sensorial revelam funcionamento deficitário em indivíduos com TEA, no que concerne ao registro e modulação (HARMS; MARTIN; WALLACE, 2010; BUXBAUM *et al.*, 2013).

Quanto ao registro, de acordo com Ayres, a participação do sistema límbico é fundamental na capacidade do indivíduo de realizar adequadamente o registro das informações sensoriais no SNC, assim como o funcionamento inadequado dessas estruturas em indivíduos com TEA foram fatores identificados nos estudos contemporâneos. O sistema límbico corresponde a um conjunto específico de regiões do SNC envolvidas em emoção, motivação, aprendizado, memória e processamento sensorial. É composto por núcleos subcorticais e estruturas corticais, incluindo a ínsula, hipotálamo, hipocampo, giro para-hipocampo, amígdala, fórnix, corpo mamilar, núcleos septais, giro cingulado e giro dentado, em ambos os lados do tálamo. No entanto, outras estruturas participam do processamento das emoções, como o córtex pré-frontal, ventral e medial, conjunto de estruturas cerebrais que são chamadas de regiões cerebrais relacionadas à emoção (ROLLS, 2015; HERRINGTON *et al.*, 2017).

Ayres (1979) destacou as amígdalas como regiões do cérebro que contêm uma proporção maior de neurônios responsáveis por sinalizar a importância do estímulo recebido, a fim de que as outras regiões do cérebro respondam, ao reconhecê-los como emocionalmente significativos. O prejuízo do funcionamento dessas estruturas, nos indivíduos com TEA, pode justificar, em parte, a detecção prejudicada com relação à compreensão do estímulo como significativo que justifique a sua integração no SNC, para uma resposta adaptativa adequada ao ambiente. Além disso, alguns estudos assinalaram que há uma ativação reduzida das amígdalas em indivíduos com TEA, enquanto executam atividades sociais (SCHUMANN; AMARAL, 2005; BRADEN *et al.*, 2017).

Outros trabalhos apontaram que as falhas na ativação dessas estruturas estão ligadas à dificuldade de estabelecer e sustentar o contato visual, identificado nos indivíduos com TEA (JONES; CARR; KLIN, 2008). Essa hipótese sugere que evitar o contato visual é uma resposta motivacional ineficiente, porque os indivíduos não são aversivos ao olhar, todavia, são indiferentes a ele; ou seja, não percebem o contato visual como estímulos informativos ou salientes e, portanto, não respondem a ele.

Atualmente, as técnicas de neuroimagem, em conjunto com estudos de rastreamento ocular, mostram que indivíduos com TEA são atraídos visualmente para

estímulos diferentes, em comparação com indivíduos com desenvolvimento típico. Os indivíduos com TEA são atraídos por informações não socialmente relevantes, ao escanear o rosto de terceiros, o que faz com que os olhos não sejam relevantes, em detrimento da boca e nariz. Essa condição, associada às respostas inadequadas da amígdala e pobre percepção de recompensa social, pode resultar no comportamento de evitar o contato visual, observado nesse transtorno (DAWSON; WEBB; MCPARTLAND, 2005; JONES; CARR; KLIN, 2008; MARTINEAU, 2016).

As regiões cerebrais responsáveis pelas emoções são estrutural e funcionalmente atípicas, nos indivíduos com TEA, porém, ainda não há consenso na literatura se o volume ou a capacidade de resposta são aumentados ou diminuídos ou como essas anormalidades são significativas para a sintomatologia do TEA (DALTON, 2007; CHANG, 2104; HANAIE, 2016). As alterações no volume cortical e subcortical dessas regiões foram associadas ao funcionamento cognitivo, assim como as alterações na substância branca foram relacionadas ao processamento das emoções, dos estímulos auditivos e habilidades motoras, de maneira integrada, devido à sua conectividade (MOSCONI, 2009; LOPEZ, 2012). As informações táteis e proprioceptivas são transmitidas para o córtex, através do tálamo, o que corrobora a teoria de Ayres de que as estruturas do tronco cerebral estão ligadas ao comprometimento motor sensorial associado à regulação emocional e modulação sensorial (MOSTOFISKY, 2009; HANAIE, 2016).

O sistema proprioceptivo, considerado por Ayres como importante para o registro das informações sensoriais, diz respeito às entradas de informações neurais provenientes das estruturas articulares, musculares, tendões e pele, interferindo no controle motor (AYRES, 1972a, 1989; LEPHART; FU, 2000) e regulação do comportamento (AYRES, 1972a, 1989; BLANCHE; SCHAAF, 2001; DUNN, 2001; MUKHOPADHYAY, 2003). As principais dificuldades mencionadas, concernentes ao processamento proprioceptivo no diagnóstico de TEA, se referem ao controle motor, planejamento motor, dificuldade para combinar controle visual e precisão manual, ao realizar alcance, desorientação espacial, baixa antecipação motora (WEIMER et al., 2001; GLAZEBROOK et al., 2009; VAKALOPOULOS, 2007; SCHMITZ et al., 2003).

Quanto à modulação, Ayres (1979) a definiu como a capacidade do cérebro de adequar a sua própria ativação e, segundo a autora, os indivíduos com TEA, além de exibirem falhas ao registrar as entradas de informações sensoriais adequadamente, revelam também dificuldade em modular a entrada das informações que são registradas. Ela sugeriu que a hiper ou a hiporreatividade, especialmente em resposta às sensações vestibulares e táteis, podem ser manifestadas em comportamentos observáveis, como a

insegurança gravitacional (medo de movimento) e a defensividade tátil (reação de luta, medo ou fuga) ou uma combinação de ambos. Kilroy, Zadeh e Cermack (2019) concebem a modulação sensorial como a capacidade do cérebro de regular a inibição ou propagação de células neurais, a partir de *inputs* sensoriais, e diz respeito aos ajustes realizados para garantir a adaptação às informações sensoriais novas ou modificadas.

Outro aspecto identificado por Ayres como deficitário, nos indivíduos com TEA, é a motivação, definida por ela como o desejo para responder ou ignorar um estímulo que foi registrado. De acordo com as suas observações, os indivíduos com TEA apresentam interesse limitado para realizar atividades intencionais ou construtivas, mesmo quando possuem capacidade motora e cognitiva para tal. Nessa condição, a amígdala (região subcortical do sistema límbico) é a principal responsável pela função "fazer alguma coisa" (AYRES, 1985). Nesse sentido, a falta de motivação é referida como déficit de motivação.

O registro consciente de estímulos sensoriais resulta na decisão de responder aos estímulos ou ignorá-los, contando com a participação das estruturas responsáveis pelo processamento das emoções que desencadeiam uma resposta motivacional, a qual leva ao desejo de fazer algo novo e/ou diferente (CHEVALLIER, 2012; SCOTT-VAN; ZEELAND; DAPRETTO, 2010). Conforme os autores, essa região responsável pela decisão de querer fazer alguma coisa evidencia alterações funcionais prejudicadas nos indivíduos com TEA, além de reconhecerem que esses indivíduos não obtêm o mesmo prazer, quando registram estímulos sensoriais, que os seus pares com desenvolvimento típico e, por essa razão, sua motivação para participar das atividades é reduzida. O prejuízo no reconhecimento da relevância dos estímulos, assim como na atribuição de recompensa prazerosa intrínseca às próprias atividades, faz declinar a motivação dos indivíduos com TEA, para se engajarem em novas formas do fazer (AYRES, 1979, FANG et al., 2016; MORRIS; OHMAN; DOLA, 1998).

Por outro lado, Ayres (1979) enfatiza que indivíduos com TEA costumam buscar e obter prazer com informações sensoriais por eles selecionadas. Entretanto, parecem não compreender as possibilidades pelas quais o envolvimento com esses estímulos, de modo funcional, poderia ser satisfatório e recompensador, nas atividades intencionais (FANG et al., 2016).

A falta de motivação para se envolver com um determinado estímulo sensorial provoca a inibição da capacidade de desenvolver a compreensão do significado potencial desse estímulo, o qual, por sua vez, contribui para um déficit no registro e/ou modulação e, conseqüentemente, perpetua a falta de motivação para se envolver, tornando-se um círculo

vicioso de prejuízo na integração sensorial dos estímulos, associada às incapacidades funcionais e interacionais (KILROY; AZIZ-ZADEH; CERMAK, 2019).

Prejuízos na motivação, notados no TEA, são prejudiciais ao desenvolvimento social e à participação em ocupações significativas, ao longo da vida. Tal condição acarreta redução no interesse de engajamento nas atividades funcionais, com prejuízo para a percepção de relevância dos estímulos, assim como para recompensa social advinda das suas ações e, conseqüentemente, interfere nos aspectos comportamentais observados no TEA (KILROY; ZADEH; CERMAK, 2019).

Além das áreas responsáveis pelo processamento das emoções envolvidas na motivação, o cerebelo recebe destaque, nessa perspectiva, sobretudo no que tange à exploração e busca por novas atividades. De acordo com Pierce *et al.* (2006), essa condição está relacionada ao processamento atípico, devido à hipoplasia cerebelar no TEA, visto que exames de imagens já comprovaram a conectividade do cerebelo com as áreas de controle emocional, no SNC, ao lado de seu papel no monitoramento das regiões cerebrais encarregadas de fornecer *feedback* necessário, direcionando o comportamento (SCHMAHMANN, 2000; EBNER; PASALAR, 2008).

Vale ressaltar que o SNC possui áreas responsáveis pela recepção e processamento das informações multissensoriais que interferem e recebem interferência das condições emocionais e sociais, resultando em comportamentos observáveis, em face da demanda ambiental.

Diante dos estudos apresentados, as contribuições de Ayres, em conjunto com os trabalhos implementados na última década, possibilitam a compreensão das condições clínicas e funcionais presentes no Transtorno do Espectro Autista, com ênfase na integração das informações sensoriais. Logo, a Abordagem de Integração Sensorial de Ayres® busca, por meio do conhecimento científico, ancorada nas suas bases filosóficas, apoiar e favorecer o desenvolvimento global dos indivíduos com Transtorno do Espectro Autista.

May-Benson e Koomar (2010) procederam a uma análise sistemática da literatura de trinta e sete trabalhos publicados, com o objetivo de identificar, avaliar e sintetizar a literatura de pesquisa a respeito da Abordagem de Integração Sensorial de Ayres®, a fim de fornecer informações úteis para orientar o planejamento da intervenção na prática clínica. Segundo as autoras, os dados encontrados sugerem que há uma tendência positiva para os resultados da Abordagem de Integração Sensorial de Ayres®, particularmente para o alcance de metas centradas no cliente e identificadas individualmente, porém, remetem a fragilidades metodológicas que colocam em dúvida a eficácia da intervenção e as possibilidades de

replicações para estudos futuros. Diante disso, sugerem o uso dos procedimentos da medida de fidelidade, de sorte a garantir a aderência aos princípios de intervenção com a Abordagem de Integração Sensorial de Ayres®, a escolha de instrumentos de avaliação que sejam capazes de medir os resultados pré e pós-intervenção, tanto para funções e estruturas do corpo quanto para participação nas atividades funcionais, e, por fim, a dosagem adequada da intervenção, tendo em vista que os estudos que mostraram resultados efetivos indicam a terapia de duas a três vezes por semana.

A Terapia Ocupacional com a Abordagem da Integração Sensorial de Ayres® é um dos serviços mais procurados no tratamento de indivíduos com Transtorno do Espectro Autista, provavelmente devido à percepção das famílias de que as disfunções de integração sensoriais interferem significativamente na participação de atividades de vida diária, acadêmicas e interações sociais (GREEN *et al.*, 2006; ABELEND; ARMENDARIZ, 2020). No Brasil, percebe-se um movimento crescente nessa direção, porém, ainda com a necessidade de avançar, especialmente por meio de uma vez que se verifica que o número de trabalhos ainda é reduzido.

II. OBJETIVO

O objetivo deste estudo foi analisar o perfil de processamento sensorial de alunos com transtorno do espectro autista e a sua influência na participação escolar.

III. MÉTODO

Este estudo foi submetido ao Comitê de Ética, vinculado à Faculdade de Filosofia e Ciências da UNESP de Marília, seguindo as recomendações vigentes na Resolução CNS 196/96 com parecer de aprovação nº 3.098.517. Posteriormente à autorização, os participantes da pesquisa e/ou responsáveis receberam todas as informações relativas ao projeto, incluindo objetivos, procedimentos de coleta de dados, tempo de duração, sigilo da privacidade do participante e utilização dos dados para fins científicos, juntamente com o Termo de Consentimento Livre e Esclarecido que foi assinado por eles.

Participaram deste estudo dezesseis alunos com Transtorno do Espectro Autista, com idade de quatro a oito anos e onze meses, classificados como nível um de gravidade matriculados em escolas públicas, e dezesseis professores de um município localizado no interior do estado de São Paulo.

Como critério de inclusão foi estabelecido que os alunos deveriam ter idade entre quatro e oito anos e onze meses no momento da inscrição, com diagnóstico de Transtorno do Espectro Autista, comprovado por laudo médico com a classificação de gravidade nível 1,

de acordo com a descrição do DSM5 (APA, 2014); ser aluno matriculado em salas comuns de escolas regulares de um município localizado no interior do estado de São Paulo; apresentar queixas de processamento sensorial apontados pelo Perfil Sensorial 2 (DUNN, 2014).

Foram excluídos do estudo os alunos que apresentavam níveis de gravidade grau 2 e 3, de acordo com o DSM5 (APA, 2014), deficiência auditiva, visual e múltiplas deficiências associadas ao TEA.

Inicialmente foi efetuada uma anamnese, contemplando os aspectos demográficos familiares, história pregressa do desenvolvimento, tratamentos atuais e queixa principal ligada à participação do aluno no ambiente escolar a partir da perspectiva dos seus pais e em seguida, foi aplicado o Perfil Sensorial do Cuidador e escolar.

Após a anamnese e análise dos resultados obtidos pelo questionário Perfil Sensorial 2 (Cuidador), do total de vinte participantes, foram selecionados dezesseis, uma vez que quatro dos alunos não finalizaram o processo de triagem.

A coleta de dados aconteceu em nove escolas da rede regular de ensino e em uma clínica de Terapia Ocupacional especializada em Integração Sensorial de Ayres®, no período de janeiro a dezembro de 2019. Foram utilizados dois instrumentos para a coleta de dados: Perfil Sensorial 2 cuidador e escolar (DUNN, 2014) e *Sensory Integration and Praxis Tests* – SIPT (AYRES, 1989).

O primeiro instrumento utilizado foi o Perfil Sensorial 2 cuidador e escolar (DUNN, 2017) que corresponde à segunda edição do instrumento Perfil Sensorial (DUNN, 1999), o qual tem como objetivo avaliar e mensurar o processamento sensorial de crianças¹ com idade de 0 a 14 anos e onze meses, baseado no julgamento do cuidador e/ou professor. As pontuações estão distribuídas em quadrantes de padrões sensoriais, seções de sistemas sensoriais, seções comportamentais e fatores escolares.

Cada questionário do Perfil Sensorial 2 apresenta um sistema de classificação em escala de 5 a 1, que define a frequência de respostas das crianças aos estímulos sensoriais: quase sempre (5); frequentemente (4); metade do tempo (3); ocasionalmente (2); quase nunca (1). Uma última opção de classificação é destinada aos casos nos quais a frequência não se aplica: (0).

Por fim, o segundo instrumento utilizado para coleta de dados corresponde ao *Sensory Integration and Praxis Tests* – SIPT que analisa o processamento sensorial no âmbito da percepção e discriminação, assim como a respeito das funções práxicas de crianças em idade de quatro a oito anos e onze meses. O teste é composto pelos seguintes subtestes: figura-fundo, equilíbrio estático e dinâmico, cópia de desenho, práxis postural, coordenação motora bilateral, práxis do

comando verbal, práxis construcional, nistagmo pós-rotatório, precisão motora, práxis sequencial, práxis oral, percepção manual da forma, cinestesia, identificação de dedos, grafestesia e localização de estímulos táteis (MAILLOUX, 1990).

IV. RESULTADOS E DISCUSSÕES

Após a análise dos dados obtidos por meio dos instrumentos de coleta de dados, foram identificados os padrões de disfunção de processamento sensorial que serão descritos a seguir.

- Padrão de somatodispraxia: é caracterizado por pobre percepção dos sistemas tátil (função discriminativa) e proprioceptivo (AYRES, 1965, 1972a, 1977; AYRES; MAILLOUX; WENDLER, 1987). Problemas de processamento do sistema vestibular podem estar associados. Crianças com problemas de discriminação do sistema tátil podem ser hiporreativas ao toque, não por problemas de modulação, porém, por baixo registro da informação, no nível do sistema nervoso central. Os relatos dos pais e/ou professores descrevem dificuldades da criança para aprender novas tarefas, realizar as atividades de vida diária, envolver-se em jogos e esportes, ser bagunceiros e desorganizados.
- Padrão de dispraxia do comando verbal está intimamente ligado à linguagem. É caracterizado pela dificuldade da criança em executar ações motoras, a partir do comando verbal (AYRES, 1989). Quando esse padrão não está associado a outros elementos, como percepção sensorial e praxia, sugere que as dificuldades evidenciadas estão mais relacionadas às disfunções de linguagem ou disfunções corticais, no sistema nervoso central. Assim, a práxis do comando verbal isoladamente não é considerada um problema de integração sensorial, porém, quando está associada aos outros padrões de disfunção, como, por exemplo, a somatodispraxia e a integração vestibular bilateral, ênfase será dada à integração do sistema auditivo relacionado especialmente ao vestibular e proprioceptivo.
- Padrão de Integração Vestibular bilateral é caracterizado por disfunções vestibulo-oculares, no controle postural e tônus muscular especialmente extensor, geralmente estando associado à somatodispraxia (AYRES, 1965, 1969, 1972a). Os indivíduos com esse padrão de disfunção geralmente demonstram desempenho abaixo do esperado, para o equilíbrio estático, dinâmico, funções de integração bilateral, sequenciamento e precisão motora. Os relatos dos pais e/ou professores referem problemas para planejar tarefas da vida diária, aprender e desenvolver atividades que envolvem funções bimanuais,



realizar atividades com seguimento visual, pouco controle para manter a postura sentada ou ortostática, quedas frequentes, comportamento desorganizado, busca intensa por movimentos.

- Disfunções de modulação sensorial são caracterizadas por respostas irregulares a estímulos sensoriais (FISHER; MURRAY, 1991). A resposta do indivíduo à entrada sensorial ocorre inconsistentemente, quanto à natureza e intensidade da informação. Seu comportamento pode ser inconsistente com as demandas da situação, gerando inflexibilidade para se adaptar aos desafios sensoriais vivenciados no cotidiano (MILLER *et al.*, 2007). De acordo com as autoras, podem ser encontrados três subtipos de disfunção da modulação: hiper-reatividade, hiporreatividade e busca sensorial.

Para a hiper-reatividade, os indivíduos respondem à informação sensorial de maneira mais rápida, com mais intensidade e/ou duração do que os indivíduos que apresentam modulação adequada (MILLER *et al.*, 2007). Suas reações excessivas diante da sensação interferem negativamente na sua participação em ocupações diárias, já que a reação de fuga, luta e medo podem surgir como resultado da hiper-reatividade, em decorrência da ativação do sistema parassimpático (AYRES, 1972a; MILLER, 1993).

Aspectos emocionais e comportamentais, como agressividade, irritabilidade, mau humor, pobre socialização, ansiedade, desatenção e alto nível de atividade, são observados. Alunos nessas condições revelam dificuldades para tolerar ambientes e atividades nas quais estejam expostos às sensações que são mal processadas no sistema nervoso central, podendo ser de ordem visual, auditiva, tátil, gustativa, olfativa ou vestibular. Vale ressaltar que é frequente a sensibilidade exacerbada para sensações combinadas de dois ou mais dos sistemas sensoriais citados. As respostas atípicas verificadas são involuntárias, configurando reações fisiológicas automáticas, principalmente em situações imprevisíveis, reduzidas em contexto nos quais se tem a autoestimulação (MILLER *et al.*, 2007).

Os relatos dos pais e/ou professores descrevem desconforto visual da criança para permanecer em ambientes com muita luminosidade ou luzes diferentes das habituais ou até mesmo a luz solar. Para o sistema auditivo, mencionam desconforto com sons do cotidiano, como aspirador de pó, liquidificador, voz aguda ou muito grave, microfone, fogos de artifícios, entre outros. Com relação ao sistema tátil, relatam que as crianças revelam desconforto ao serem tocadas, ao usarem roupas com determinados tipos de tecidos ou etiquetas, brincar com tintas, argila, massinha, areia, cola. Além disso, costumam não tolerar a sensação de suor ou roupas molhadas, rosto e mãos sujas. Os sistemas gustativo e olfativo estão

comumente associados a problemas relacionados à seletividade alimentar e as principais dificuldades destacadas envolvem evitar gostos e cheiros tipicamente tolerados para a maioria das pessoas, náuseas com determinadas texturas de alimentos, padrões inflexíveis alimentares, com experiências restritas a poucos alimentos. Por fim, a hiper-reatividade do sistema vestibular é descrita pelos pais e/ou professores como medo e/ou insegurança em nova posição postural, uma reação emocional excessiva às sensações de movimento contra gravidade (AYRES, 1979).

Nos casos dos alunos com hiporreatividade, tal disfunção pode estar ligada ao baixo registro sensorial. Eles parecem não detectar informações sensoriais recebidas, condição que pode levar à apatia, letargia e uma aparente falta de impulso interno, para iniciar a socialização e a exploração do ambiente. No entanto, essa condição não deve ser atribuída à falta de motivação, contudo, à dificuldade de identificar os estímulos e as possibilidades de ações sobre o ambiente. A hiporreatividade pode estar associada à disfunção de percepção sensorial e, quando ocorre no sistema tátil e proprioceptivo, por exemplo, pode ser identificado um quadro concomitante de dispraxia (MILLER, 2007).

O nível de alerta adequado, a fim de que o aluno seja capaz de alcançar suas habilidades socioemocionais e organização do comportamento, é essencial e, para tanto, a intensidade e duração dos estímulos são fundamentais. A entrada sensorial deve ser de alta intensidade, de sorte a promover o envolvimento em uma tarefa ou interação, e os *inputs* vestibulares e proprioceptivos com intensidade elevada são empregados para modular o alerta e a reatividade sensorial.

Os alunos que apresentam a busca sensorial como padrão de disfunção da modulação desejam uma quantidade ou tipo incomum de *input* sensorial e parecem ter um desejo insaciável por sensação. Eles se envolvem energeticamente em ações que acrescentam sensações mais intensas, por meio de muitas modalidades (gustativa, auditiva, visual, vestibular). As características de comportamento decorrentes dessa disfunção podem influenciar interações sociais, prejudicar o processo de aprendizagem e autonomia, nas atividades de vida diária.

Esses alunos apresentam dificuldades para engajar-se ativamente em tarefas e interações; suas habilidades de comunicação não são funcionais, a fim de garantir a eficiência na linguagem com seus pares e professores; exibem posturas e padrões de comportamentos repetitivos e inflexíveis, que interferem nas suas habilidades acadêmicas, sociais e lúdicas (ASHBURNER; ZIVIANI; RODGER, 2008). Dessa forma, esses alunos podem necessitar de estímulos sensoriais em diferentes níveis de intensidade e características,

podendo transitar entre condições de hiper-reativos, hiporreativos e buscadores sensoriais (MILLER-KUHANECK; KELLEHER, 2015).

Os alunos com perfil de buscador sensorial necessitam de um alto nível de atividade para obter as informações sensoriais capazes de neutralizar o seu limiar neurológico alto de excitação. Esses casos, o sistema nervoso central não responde adequadamente aos estímulos ambientais, porque é necessária uma intensidade elevada, a qual não seria bem tolerada para a maioria das pessoas. Esses alunos buscam informações sensoriais constantemente e, dessa forma, apresentam um perfil descrito como facilmente distraídos, descoordenados, ativos, impulsivos ou sem consciência relacionada aos riscos à segurança. Podem transitar facilmente pela descrição de afetuoso a agressivo, uma vez que podem tocar ou abraçar pessoas e reagir agressivamente, quando contrariados ou frustrados, em atividades de competição.

As atividades escolares dos alunos com esse perfil geralmente são confusas, desorganizadas, com papéis rasgados, devido ao excesso de pressão que exercem sobre o lápis, durante a escrita. Para o buscador sensorial, é muito difícil permanecer sentado e organizado, durante a aula. (MURRAY-SLUTSKY; PARIS, 2005). As atividades escolares podem ser muito difíceis ou pouco interessantes, em função da falta de *feedback* sensorial e, por essas razões, eles costumam evitá-las. Por isso, é importante que as atividades, assim como as habilidades do aluno, a integração sensorial e as reações emocionais diante da demanda sejam analisadas, para que seja possível identificar os fatores que desencadeiam a recusa por realizar as atividades propostas.

Os alunos com perfil sensorial hiporreativo apresentam alto limiar neurológico de excitação e precisam, por conseguinte, de *inputs* sensoriais intensos, para que sejam registrados e provoquem a motivação para a ação. Esses alunos normalmente são passivos, com bom comportamento, silenciosos, e podem não se envolver facilmente nas atividades. As pessoas e objetos presentes no ambiente muitas vezes não são percebidos e, desse modo, costumam evitar situações de atividades e jogos coletivos, preferindo estar sozinhos. Exibem baixo tom de voz; habilidades de coordenação motora grossa e fina, controle postural e força são pouco desenvolvidos (MURRAY *et al.*, 2009).

Alunos com padrão de hiper-reatividade sensorial revelam baixo limiar neurológico de excitação (DUNN, 1999). Eles respondem aos estímulos sensoriais do ambiente com mais intensidade e frequência do que os demais alunos que evidenciam limiar de excitação dentro da normalidade (MILLER, 2007). Essas respostas exacerbadas podem estar relacionadas a uma ou mais modalidades de estímulo

sensorial e são observadas no comportamento e reações do aluno, em diversas situações. Os alunos hiper-reativos podem ficar muito incomodados com ambiente ruidoso, com o toque, manipulação de diversas texturas, entre outras condições. Suas reações emocionais são geralmente intensas em face dessas demandas e costumam evitar as situações previsivelmente ameaçadoras, como, por exemplo, brincar com os amigos no parque, durante o intervalo. Tendem a distrair-se com estímulos visuais e evitam situações que desafiam seu controle postural e, portanto, as suas habilidades motoras; sobretudo o equilíbrio dinâmico é pouco desenvolvido (MURRAY *et al.*, 2009).

O comportamento dos alunos hiper-reativos é muito desafiador para os professores, já que são alunos ansiosos, arredios, com dificuldade para transitar de uma atividade para a outra, e demoram a se reorganizar, em situações de estresse. Tais condições impactam significativamente no aspecto social e educacional do aluno, no ambiente escolar (BUNDY *et al.*, 2002; MURRAY-SLUTSKY; PARIS, 2000, 2005).

Os resultados encontrados no perfil sensorial acompanhamento escolar desvelam o processamento sensorial, no ambiente escolar dos alunos com Transtorno do Espectro Autista pesquisados, com padrão predominante de sensibilidade, ou seja, os alunos, na sua maioria, revelavam baixo limiar neurológico para percepção e processamento sensorial, o que significa que esses alunos tinham dificuldades para habituação aos estímulos sensoriais, e suas estratégias de autorregulação eram passivas.

De acordo com Miller-Kuhaneck e Kelleher (2015), quando se tem essa condição, os alunos apresentam dificuldades para regular a sua resposta à sensação, interferindo na sua participação ao longo das atividades funcionais, em decorrência de manifestações comportamentais inadequadas diante desses *inputs* sensoriais, os quais geralmente são repentinos, prolongados e mais intensos, na percepção do aluno com disfunção de integração sensorial.

Com relação às áreas de maior desafio, do ponto de vista sensorial, identificadas neste trabalho, pelo perfil sensorial cuidador e de acompanhamento escolar, sobressam-se as atinentes ao sistema auditivo, proprioceptivo (percepção corporal), tátil e, por último, visual. Essa característica vem ao encontro dos achados nos estudos de Baranek *et al.* (2006), Royeen e Fortune (1990).

Crianças com TEA são excessivamente mais sensíveis aos sons altos (KHALFA *et al.*, 2004; MARCO *et al.*, 2011), de maneira que o ruído excessivo identificado nos ambientes escolares pode trazer prejuízos importantes para atenção, regulação do comportamento e aprendizagem. Os ruídos da lanchonete e dos corredores podem ser assemelhados aos ruídos de uma serra elétrica ou tráfego de trânsito

intenso, o que está muito acima do recomendado pela Organização Mundial da Saúde, que seria de 35db para sala de aula e 55db para áreas externas (BERGLUND; LINDVALL; SCHWELA, 1999).

Investigação de Alcantara *et al.* (2004) descobriu que o processamento auditivo foi a modalidade sensorial mais prejudicada no ambiente da sala de aula, porque é caracterizado pela baixa capacidade de adaptabilidade sensorial, de forma que o estímulo auditivo, mesmo quando é repetitivo e previsível, causa desconforto e pouca condição de habituação. Outro aspecto fundamental é que a maioria das instruções veiculadas na sala de aula é verbal, rápida e transitória, o que torna muito difícil o processamento, especialmente com estímulos auditivos competitivos (QUILL, 1997).

No que concerne ao sistema tátil, este pode ser menos afetado em alunos com TEA, no ambiente domiciliar do que no ambiente escolar. Essa condição é justificada pela característica de fácil adaptabilidade ao toque, quando ele é apresentado com intensidade moderada e previsibilidade, o que normalmente acontece no ambiente domiciliar. Por outro lado, no ambiente escolar, os estímulos táteis são mais imprevisíveis e reconhecidos como invasivos, na maioria das vezes, ao serem experimentados em um contexto onde a espontaneidade e a confiança do aluno ficam reduzidas, em comparação ao ambiente domiciliar, onde estão expostos a maior proximidade física com seus familiares (DUNN; MYLES; ORR, 2002; DUNN; SAITER; RINNER, 2002).

A despeito de não ser tão frequentemente relatado como déficits sociais, os déficits motores, que em grande parte dizem respeito às disfunções do sistema proprioceptivo, foram amplamente identificados em alunos com TEA, por vários pesquisadores (FOURNIER *et al.*, 2010; MING;), os quais destacam que tal condição acarreta prejuízo no desenvolvimento da coordenação motora grossa e fina, dificuldades de controle postural, além de interferir na participação em uma série de atividades fundamentais para o seu desenvolvimento.

Koop, Beckung e Gillberg (2010) encontraram, em seu estudo, achados que relacionam a participação de sucesso nas atividades escolares ao desenvolvimento de habilidades motoras, sobretudo no que tange às habilidades de coordenação motora fina necessárias para a realização de atividades gráficas.

Considerando as características do ambiente escolar, é possível inferir o quanto é desafiador para o aluno com TEA, com essas características de integração sensorial, executar as atividades propostas com um nível de participação adequado, diante de um ambiente coletivo com exigências de trocas e interações sociais, estímulos auditivos intensos, experiências táteis diversas, desafios motores, práticos, além de outras demandas, como as cognitivas e

afetivo-emocionais (BARRETT *et al.*, 2013; FISHER; GODWIN; SELTMAN, 2014; GODWIN *et al.*, 2013). Dessa forma, a análise da participação dos alunos com TEA, no contexto escolar, deve implicar uma visão abrangente, para além das suas possibilidades oriundas das funções e estruturas do corpo, enfatizando todas as particularidades do ambiente, contexto e das demandas das atividades.

A capacidade de responder, de maneira modulada (ao invés de responder exageradamente), a estímulos externos ou internos é compreendida como a base do desenvolvimento de competências sociais, acadêmicas e de autocuidado (AYRES, 1964; DUNN, 1997).

Os níveis de reatividade estabelecidos pelo aluno, com relação aos aspectos sensoriais provenientes do contexto de uma determinada atividade, permitem que sejam capazes de se concentrar, manter e modificar a atenção para informações relevantes, sem superalocar a atenção para monitorar a ameaça de sensação potencialmente nociva (DUNN, 2017). Isso faz com que o aluno se aproxime e explore com confiança os ambientes e interaja com seus pares, enquanto monitora com cuidado apropriado os eventos de ameaça que surgem, mantendo-se regulado, do ponto de vista comportamental.

Os aspectos relacionados ao comportamento foram relatados com ênfase, condição a qual interfere diretamente na aprendizagem e interação social dos alunos com TEA. Esses resultados corroboram estudos realizados anteriormente, que apontam problemas socioemocionais associados aos padrões de hiper-reatividade sensorial, inclusive com comorbidades secundárias, como, por exemplo, a depressão e a ansiedade (PFEIFFER *et al.*, 2005).

Tais manifestações observáveis no comportamento do aluno costumam surgir com características de medo, distração, alerta excessivo, agressão e esquiva, principalmente quando o estímulo não é autoiniciado (AYRES, 1964; DUNN, 1997; MILLER *et al.*, 2007). Assim, a participação do aluno com TEA em atividades escolares fica limitada, além de desencadear dificuldades de interação social e problemas de aprendizagem. Kane (2013) destaca que, quando a capacidade de um aluno integrar as informações sensoriais está comprometida, o seu desempenho em ocupações também é comprometido, e o engajamento bem-sucedido em ocupações é limitado.

A integração sensorial, reconhecida como um desafio para alguns alunos, acarreta situações estressantes, ao longo das atividades que deveriam ser cotidianas, corriqueiras ou automáticas. O aluno, quando consciente de suas dificuldades, frustra-se, desenvolvendo uma tendência a evitar ou rejeitar atividades simples (sejam elas motoras, sejam

sensoriais) que exijam o contato com sensações diversas, como brincar ou ir à escola.

Para um aluno com desenvolvimento típico, embora algumas sensações possam ser desconfortáveis, ele é capaz de manter-se regulado e engajado em suas atividades. Contudo, para um aluno com disfunção de integração sensorial, o som do giz raspando na lousa ou o som de sinal para o lanche, os desenhos coloridos na lousa, as cadeiras e mesas coloridas da sala, o cheiro e os sabores da merenda, as texturas diversas de recursos utilizados pelo professor, os brinquedos do parque e as relações sociais com os colegas podem ser altamente desafiadores e compreendidos como incômodo ou desconforto (BARROS, 2019).

Esses alunos têm um processamento sensorial diferente, porque eles podem não perceber adequadamente as sensações, senti-las excessivamente e/ou necessitar de mais informações sensoriais, a fim de conseguir se organizar, para que possam emitir uma resposta adaptativa frente a elas. Ayres (2005) ressalta que crianças com TEA não apenas falham, ao registrar a entrada sensorial corretamente, mas também revelam dificuldade em modular a entrada em que elas fazem registro.

Os resultados deste trabalho demonstraram que, o perfil de processamento sensorial identificado nos alunos com TEA, nesta investigação, corrobora trabalhos efetuados por outros pesquisadores, reconhecendo-se o padrão de sensibilidade (hiper-reatividade) como predominante, ao se tratar de modulação no ambiente domiciliar e escolar, nos quais as áreas de maior desafio se referem à audição e ao tato, enquanto a área de melhor processamento sensorial é a visão. Além disso, os aspectos que dizem respeito ao comportamento foram muito presentes, em ambos os grupos, o que interfere diretamente na aprendizagem e interação social dos alunos com TEA.

Com relação à práxis e percepção sensorial, os dados do SIPT sugeriram que os alunos pesquisados apresentam padrão de disfunção somatossensorial, de processamento vestibular, integração bilateral e desafios associados às habilidades práticas, especialmente as que dependem da linguagem, imitação e sequenciamento. Novamente, a área de percepção e praxia visual é a que mostra melhores habilidades nos alunos com TEA.

Smith *et al.* (2007) analisaram o impacto das disfunções de integração sensorial na participação em ocupações infantis, com enfoque no brincar, apontando que os problemas de autorregulação e modulação interferem no engajamento para as brincadeiras, no contexto da Educação Infantil.

Miller-Kuhaneck e Kelleher (2015) referem que alunos com TEA podem responder melhor em contextos escolares que realizam as modificações as quais atendam às suas necessidades sensoriais, de

maneira individualizada, todavia, os professores podem não possuir a clareza necessária do impacto desses aspectos integrativos na participação e, nesse sentido, precisar de muito suporte e informação. Ainda assim, é necessário levar em conta que a sala de aula é de domínio do professor, e caberá a ele decidir quais mudanças podem ou não ser implantadas, em sua sala de aula.

A investigação dos processos de integração sensorial, no ambiente escolar, é fundamental para que seja possível compreender tais condições, que costumam ser mais intensas, no contexto escolar, considerando que o ambiente social e o ambiente físico das escolas tendem a ser mais desafiadores do que o ambiente domiciliar, de sorte que os alunos podem ter menos controle sobre o ambiente e as demandas por ele impostas (MILLER; SUMMERS, 2001).

As práticas da Terapia Ocupacional com melhores resultados, no contexto escolar, de acordo dizem respeito àquelas com as quais o terapeuta partilha seu conhecimento, para possibilitar que o professor decida o que e como fazer, a partir do conhecimento adquirido.

V. CONCLUSÃO

O papel que o Terapeuta Ocupacional assume, no contexto escolar, tem impacto direto na participação do aluno com TEA, e este estudo oferece subsídios para a continuidade da pesquisa e prática com essa população. Ele demonstra também a importância da articulação da clínica com o contexto real de participação, visto que os dois ambientes se complementam na perspectiva de desenvolvimento do aluno. Todavia, vale ressaltar que, além de compreender a influência do contexto sobre a participação do aluno, é necessário compreender a influência do aluno sobre o contexto, especialmente o escolar.

O Terapeuta Ocupacional, com a sua *expertise* na análise das ocupações, pode contribuir com as inferências de hipóteses junto à equipe escolar, tendo como objetivo identificar quais são os entraves e os facilitadores, para que haja a participação efetiva dos alunos com TEA. Dessa forma, os aspectos de funções estruturas do corpo, ambiente e atividade são analisados de maneira interacional e dinâmica, para que, assim, as estratégias pertinentes possam ser estabelecidas em parceria com a equipe escolar.

A interação professor, terapeuta e aluno é fundamental, para que esse processo ocorra de modo eficaz, e, nesse sentido, a mediação aqui proposta deve ser entendida como ponto de partida para a sistematização dessa prática, na qual as estratégias são desenvolvidas a partir de dados objetivos e subjetivos, bem como descritas e relatadas de maneira clara, para que o professor possa compreendê-las,

colocá-las em prática e realizar os ajustes, quando necessário. Reconhecemos que essa condição pode não ser suficiente para garantir a participação de alunos com TEA, nas quais os aspectos relacionados às disfunções de Integração Sensorial estejam exercendo impacto negativo.

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Prolonged use of Screens in Children and their Harm

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Summary- The development of a child encompasses the definition, measurement, and assessment of the expected normal patterns at each growth stage corresponding to their age. The child's passivity in response to stimuli has wide-ranging effects on a variety of domains, including communication skills and, consequently, cognitive, motor, and social development. Additionally, excessive screen time has a negative impact on the sleep-wake cycle, which in turn affects learning capacity and attention, as well as the risk of heart disease and depression. The lack of outdoor activities is closely linked to the growing trend of remote learning, which has resulted in an increased substitution of these activities with online games and video apps. Additionally, the use of electronic devices for more than three hours daily is associated with the worsening of symptoms related to ADHD, anxiety, and parental stress. However, following the COVID-19 pandemic and the widespread adoption of remote learning, screen time has significantly increased, making parental control more challenging, while the absence of physical activities has been exacerbated during this period, potentially leading to future consequences.

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Prolonged use of Screens in Children and their Harm

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Summary- The development of a child encompasses the definition, measurement, and assessment of the expected normal patterns at each growth stage corresponding to their age. The child's passivity in response to stimuli has wide-ranging effects on a variety of domains, including communication skills and, consequently, cognitive, motor, and social development. Additionally, excessive screen time has a negative impact on the sleep-wake cycle, which in turn affects learning capacity and attention, as well as the risk of heart disease and depression. The lack of outdoor activities is closely linked to the growing trend of remote learning, which has resulted in an increased substitution of these activities with online games and video apps. Additionally, the use of electronic devices for more than three hours daily is associated with the worsening of symptoms related to ADHD, anxiety, and parental stress. However, following the COVID-19 pandemic and the widespread adoption of remote learning, screen time has significantly increased, making parental control more challenging, while the absence of physical activities has been exacerbated during this period, potentially leading to future consequences.

I. INTRODUCTION

According to the child's age, child development establishes, measures, and evaluates the expected standards for each stage of growth while also highlighting the potential needs of this population. Pediatric professionals warn of the negative effects of prolonged use of electronic devices, which can hinder the achievement of important milestones at various stages of childhood due to indiscriminate exposure to screens such as television, smartphones, and tablets. The World Health Organization (WHO) implemented the International Classification of Diseases for Digital Addiction (ICD 11), which is directly associated with mental disorders and physiological changes, highlighting the importance of supervision and limiting exposure to electronic devices. This aims to keep children away from inappropriate content that could have a negative impact on their physical and mental health.

II. METHODOLOGY

This is a bibliographic review, whose sources were predominantly extracted from the Google Scholar and PubMed data platforms but also included gray literature such as Ministry of Health manuals and websites. The search period covered July and August

2023, respecting the inclusion criteria that consisted of articles published between the years 2000 and 2023, in Portuguese and English, with online access and availability in full format. To improve the search, health descriptors from the DeCS/MeSH platform were used, namely: Child Development; Growth; Pediatrics; Television; Child Development; Growth and Development; Mental disorders.

III. DISCUSSION

Child development defines, quantifies, and qualifies expected standards for each period of growth indicated by the child's age, in addition to warning about possible demands that this population needs (1-2). Pediatric care considers that the prolonged use of screens impairs the achievement of some milestones characteristic of certain stages of a child's life, resulting from indiscriminate exposure to screens such as television, cell phones, and tablets. 3

Early access to electronics is related to the high amount of screen time used by those responsible, considering that electronics are part of the routine of adults who surround them for a large part of the day, also highlighting a difficulty in controlling access to the entire work environment. The environment in which the child is inserted. Furthermore, another reason is passive distraction, that is, the exchange of stimuli that keep individuals active for videos and games that can ensure the child's fulfillment in environments that can generate possible embarrassment or difficulty in carrying out activities in the company of the individual, keeping it static in front of electronics. 4

The child's passivity in the face of stimuli causes consequences in several areas, such as communicative ability and therefore cognitive, motor, and social development. Access to screens also has an impact on the sleep/wake cycle, which directly affects learning, attention, heart disease risk, and depression. 5

In addition to the factors mentioned, the use of screens for more than 3 hours per day is related to the worsening of the prognosis of ADHD, anxiety, and stress in parents. 6 However, after the COVID-19 pandemic and remote teaching, the number of hours has become extremely greater, causing parental control to be impaired, which is also related to the absence of physical activities that were exacerbated during this period. 7

The absence of activities in an external environment is also closely linked to the need that has become widespread recently for remote teaching and the replacement of these activities with online games and video applications. Consequently, the increase in adiposity and body mass indexes in childhood is directly proportional to the number of hours spent in front of electronic devices. Therefore, the WHO implemented the international disease coding for digital addiction (ICD 11), which is directly involved with mental disorders and related physiological changes, highlighting the need for supervision and limitation of exposure to electronic devices and keeping children away from inappropriate content that may further interfere with your physical and mental health. 8

IV. FINAL COMMENTS

Child development and exposure to electronic screens are significantly interconnected. It is essential to recognize the importance of monitoring and limiting children's screen time to ensure healthy development. Digital addiction, now recognized by WHO ICD 11, highlights the serious impacts that excessive use of electronic devices can have on children's mental and physical health. To promote the healthy development of children, it is essential that parents, caregivers, and pediatric healthcare professionals are aware of the signs of digital addiction and take steps to limit access to content. Inadequate. Furthermore, encouraging outdoor activities and social interactions outside the virtual world is essential for children's balanced growth. In summary, the balance between screen use and child development is a relevant concern today, especially in the post-pandemic period, and awareness and action are essential to ensure that children grow healthily and develop cognitive, motor, and social skills suitable for their full development.

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ASSOCIATE OF MEDICAL RESEARCH COUNCIL is the membership of Global Journals awarded to individuals that the Open Association of Research Society judges to have made a 'substantial contribution to the improvement of computer science, technology, and electronics engineering.

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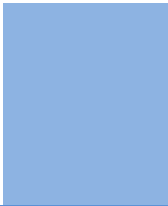
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We accept the manuscript submissions in any standard (generic) format.

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3. Ensure corresponding author's email address and postal address are accurate and reachable.
4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s') names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
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3. Final approval of the version of the paper to be published.

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Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

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PREPARING YOUR MANUSCRIPT

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.



Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

- a) A title which should be relevant to the theme of the paper.
- b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
- c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
- d) An introduction, giving fundamental background objectives.
- e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
- f) Results which should be presented concisely by well-designed tables and figures.
- g) Suitable statistical data should also be given.
- h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

- i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
- j) There should be brief acknowledgments.
- k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.



FORMAT STRUCTURE

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in a research paper?" Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.



Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

PREPARATION OF ELETRONIC FIGURES FOR PUBLICATION

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

TIPS FOR WRITING A GOOD QUALITY MEDICAL RESEARCH PAPER

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of medical research then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.



6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.



20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium through which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.



Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.



The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.



Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- o Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- o In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- o Present a background, such as by describing the question that was addressed by creation of an exacting study.
- o Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- o Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- o Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- o Do not include raw data or intermediate calculations in a research manuscript.
- o Do not present similar data more than once.
- o A manuscript should complement any figures or tables, not duplicate information.
- o Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."



Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- o You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- o Give details of all of your remarks as much as possible, focusing on mechanisms.
- o Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- o One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- o Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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BY GLOBAL JOURNALS

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Topics	Grades		
	A-B	C-D	E-F
<i>Abstract</i>	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
<i>Introduction</i>	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
<i>Methods and Procedures</i>	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
<i>Result</i>	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
<i>Discussion</i>	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
<i>References</i>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



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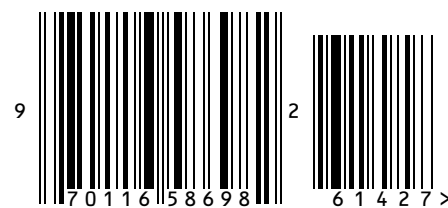
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