Impact of research paradigms on low-income female caregivers and their children: an oral health literacy discourse

Meaghan G Bennett*, BHSc, RDH, CAEd

PRACTICAL IMPLICATIONS OF THIS RESEARCH

- Oral health professionals must improve their understanding of how to empower and advocate for low-income female caregivers to increase their oral health literacy.
- An emphasis on social justice and advocacy has the potential to help change female caregivers' behaviours, improving their ability to access and navigate health care information and services and, ultimately, their and their children's oral and overall health.

ABSTRACT

Objective: Despite the vast knowledge gained through research and public health surveillance, dental caries prevalence among children from low-income households remains high. The aim of this literature review is to identify assumptions made within existing empirical, constructivist, and critical paradigms to determine how those assumptions impact knowledge and if these impacts have aided in perpetuating inequity or health disparities within this target population. **Method:** A literature search of EBSCOhost, PubMed, and Web of Science was conducted to retrieve articles from peer-reviewed journals published in the last 10 years, including qualitative, quantitative, and mixed methods studies. Qualitative methods included narrative research via interviews; quantitative designs included cross-sectional studies using surveys and various indices to assess oral health literacy (OHL) levels and oral health status. Exclusion criteria were non-English studies and studies that did not include female caregivers. **Results:** Nine primary research articles were selected for analysis. The positivist paradigm was dominant in 7 of 9 articles. Oral health social processes, such as the lack of value placed on oral health as a component of overall health by the broader medical community and the public, were not discussed as influencing factors on OHL. **Discussion:** Assumptions identified within the dominant paradigms were determined to perpetuate inequity or health disparities, confirming a link between caregivers' OHL levels and the oral health status of their children. It is critical that all health care professionals improve their understanding of factors affecting caregivers' OHL. **Conclusion:** Strategies that empower and advocate for women to improve their OHL should be developed.

RÉSUMÉ

Objectif : Malgré les vastes connaissances acquises par le biais de la recherche et des activités de surveillance de la santé publique, la prévalence des caries dentaires chez les enfants vivant dans des ménages à faible revenu demeure élevée. La présente revue de la littérature vise à cerner les suppositions des paradigmes empiriques, constructivistes et critiques existants afin de déterminer comment elles influent sur les connaissances, et si ces effets ont contribué à perpétuer les iniquités ou les disparités en matière de santé au sein de cette population cible. **Méthodes :** On a procédé à une recherche documentaire sur EBSCOhost, PubMed et Web of Science pour trouver des articles publiés au cours des 10 dernières années dans des revues à comité de lecture, y compris des études par cohortes qualitatives, quantitatives et mixtes. Les méthodes qualitatives comprenaient des recherches narratives réalisées au moyen d'entrevues. Les méthodes quantitatives comprenaient des études transversales faisant appel à des sondages, ainsi que divers indices visant à évaluer les niveaux de littératie en santé buccodentaire et la situation en matière de santé buccodentaire. Les critères d'exclusion s'appliquaient aux études non anglophones et aux études qui n'incluaient pas de femmes soignantes. **Résultats :** Neuf articles présentant des études originales ont été sélectionnés aux fins d'analyse. Le paradigme positiviste était dominant dans 7 des 9 articles. L'influence de certains processus sociaux de santé buccodentaire, tel que le manque de valeur accordée à la santé buccodentaire en tant qu'élément de la santé globale par la communauté médicale en général et par le public, sur la littératie en santé buccodentaire n'a pas été discutée. **Discussion :** On a établi que les suppositions définies dans les paradigmes dominants perpétuaient l'iniquité ou des disparités en matière de santé, ce qui confirme l'existence d'un lien entre le niveau de littératie en santé buccodentaire parmi les soignants et l'état de santé buccodentaire de leurs enfants. Il est essentiel que tous les professionnels de la santé renforcent leur compréhension des facteurs qui influent sur cette littératie chez les soignants. **Conclusion :** Il est nécessaire d'élaborer des stratégies propres à défendre les femmes et à leur donner les moyens d'améliorer leur littératie en santé buccodentaire.

Keywords: children's oral health; critical paradigms; low-income female caregivers; oral health literacy
CDHA Research Agenda category: access to care and unmet needs

INTRODUCTION

Worldwide, dental caries is the most prevalent chronic disease in humans.[1] Within Canada, dental surgery related to early childhood caries (ECC) is the most common surgical outpatient procedure in preschool children.[2] Associations between poor oral health and low nutritional intake, low self-image, impaired growth in children, and difficulties

*Master's student, Athabasca University, Athabasca, AB, Canada

Correspondence: Meaghan Bennett; meaghangbennett@gmail.com
Manuscript submitted 21 November 2022; revised 17 August, 31 August, and 13 December 2023; accepted 2 February 2024

in learning have been established.[1-6] Correlations have also been identified with chronic conditions such as diabetes, respiratory and cardiovascular diseases.[1,5] Due to the prevalence of poor oral health, and its connection to systemic health, it is imperative that all health care providers increase their understanding of all social determinants of health impacting a child's oral health to improve approaches to addressing the health inequities affecting this population, including enhancing policy and program development.[4,6]

A connection between female caregivers' oral health literacy (OHL) levels and the oral health of their children has also been established in the literature: children of female caregivers with higher levels of OHL experience better oral health outcomes, comparatively.[7-9] With this knowledge, it is critical for oral and other health care professionals to improve their understanding of how to empower and advocate for women to increase their OHL as higher literacy levels can positively impact their behaviours, potentially improving their ability to access and navigate health care information and services, and thus improving their own and their children's oral and overall health.[5,10-12] The lack of knowledge of the oral–systemic link among the general public and medical professionals contributes to the reproduction of dominant cultural norms that do not value oral health as a significant component of overall health.[10]

Research paradigms are an important consideration when learning about a health topic and associated issues as these paradigms shape the discourse and culture of health care including organizational structures and systems.[13] It is critical to note how these paradigms dictate what kind of knowledge is sought in research as well as how this knowledge is generated. The aim of this literature review is to identify assumptions made within existing empirical, constructivist and/or critical paradigms to determine how they impact knowledge and if these impacts have aided in perpetuating inequity or health disparities within this target population.

METHODS

The databases searched for this literature review were EBSCOhost, PubMed, and Web of Science. Search criteria were articles from peer-reviewed journals published in the last 10 years. Exclusion criteria were non-English studies and studies that did not include female caregivers.

RESULTS

Nine primary research articles were selected, all of which explored female caregivers' OHL levels and possible impacts on their children's oral health. The geographic locations of the studies were Canada, the United States, Australia, India, and Senegal. Cohort studies included qualitative, quantitative, and mixed methods. Qualitative methods include narrative research via interviews, and quantitative designs included cross-sectional studies using surveys and various indices assessing OHL levels and oral health status. Seven of the nine articles reviewed used exclusively quantitative data to form their conclusions, placing them into a positivist paradigm. Two displayed aspects aligning with a constructivist paradigm. No articles employed a critical theory lens (Table 1).

The positivist paradigm was the dominant research paradigm (evident in 7 of 9 articles analysed) in low-income female OHL-focused studies. Oral health social processes, such as the lack of value placed on oral health as a component of overall health within the broader medical community and among the public, were not discussed as influencing factors on OHL. The impact of having a dominant positivist paradigm also influences larger health systems and communities, leading to health inequities through the identified gaps in adequately addressing relevant social determinants of health in this population. All positivist articles reviewed failed to identify or discuss many relevant social determinants of health impacting OHL. These articles, however, supported assumptions regarding OHL (e.g., the ideology that improvements in OHL can only be confirmed using quantitative measures). These omissions and assumptions were determined to aid in perpetuating inequity or health disparities.

DISCUSSION

The aim of this literature review is to identify assumptions made within existing empirical, constructivist, and critical paradigms to determine how they impact knowledge and if these impacts have aided in perpetuating inequity or health disparities within this target population. The types of research paradigms found in the articles selected and how they may impact or contribute to current health disparities will be analysed. Issues related to power and cultural factors stemming from these paradigms will also be reviewed.

Table 1. Articles retrieved for review

Positivist articles	Constructivist articles	Critical theory articles
Alvey et al. (2020)[8] Divaris et al. (2011)[14] Lee et al. (2011)[15] Lee et al. (2012)[16] Sowmya et al. (2021)[17] Vann et al. (2010)[18] Dieng et al. (2021)[19]	Maybury et al. (2019)[9] Arora et al. (2014)[21]	None

Positivist paradigm

Based on the search parameters, many articles used a positivist paradigm as 7 of the 9 articles reviewed relied exclusively on quantitative data to form their conclusions.[8,14-19] The articles all sought information under the assumption that there is one objective reality and that knowledge should be gained though the exclusive use of measurement tools. Examples of common tools used in these studies are oral examinations using the DMFT (decayed, missing & filled teeth) Index as well as oral health literacy questionnaires using varying Likert scales.[8,14,15-19] In addition, the conclusions of these articles also reflected a positivist paradigm. For example, a victim-blaming approach towards mothers was identified, which is perpetuated through the use of a positivist paradigm.[20] Mothers were simply seen as at-fault for their children's health status without acknowledgement or discussion of critical, broad social determinants of health that create health inequities and contribute to their children's poor oral health.[20] These assumptions and biases can have a negative impact on access to health care services and information.[8,20] Although the studies collected data associated with socioeconomic status (e.g., level of education), their conclusions did not consider these data as impacting factors. Rather, the articles concluded that an increase in mothers' OHL is critical to improving the oral health of their children.[8,14,15-19]

There was no discussion of barriers these low-income female caregivers face, which limit opportunities for higher education or access to oral health materials/information (associated with higher OHL levels), nor were there any approaches suggested to address factors that impact these women's current OHL levels.[13] These articles identified lack of awareness as a barrier preventing the target population from accessing services and programs (higher OHL increases the likelihood of mothers engaging in preventive health measures or activities) but did not discuss the importance of understanding and addressing this lack of awareness as a possible solution for improving female caregivers' OHL levels and their children's oral health.[11,13] There was no discussion of how broader social determinants of health, such as social status, have created barriers that prevent these female caregivers from improving their OHL. All articles also had discourse from one perspective (that of the health care provider), limiting considerations and implying that solutions to this health issue should only involve oral health care providers improving OHL levels of female caregivers. The positivist paradigm's insistence on a single reality perpetuates and reinforces a system where health care providers have control over others' health.[13]

Constructivist paradigm

Of the 9 articles selected for review, 2 displayed aspects indicative of a constructivist paradigm.[9,21] Using qualitative research methods, these 2 articles were able to help the reader understand a socially constructed reality.[9,13,21] The articles assumed that multiple realities exist, as Maybury et al.[9] used a mixed methods approach, which involved gathering qualitative data via one-on-one interviews or focus groups. Arora et al.[21] completed unstructured interviews with 24 female caregivers with young children. Arora et al. also included direct quotations from the interview participants to describe major themes that emerged from the analysis. In addition to the research methods employed in these 2 studies, the discourse used to formulate conclusions also reflected a constructivist paradigm.[9,13,21] Maybury et al. concluded, "to decrease caries rates, policies and programs must be implemented to increase the OHL of low-income pregnant women."[9] Through an increase in understanding of varying perspectives, the constructivist paradigm allowed researchers to explore ways in which health care providers and administrators could improve access to oral health information by creating policies and programs that target factors negatively impacting health status and perpetuating health disparities for this target population.

The utilization of constructivist paradigms in oral health research improves recognition of broader social determinants of health (e.g., low income), allowing this perspective to guide attempts to enhance access to health information as an approach to improving health outcomes.[13] Furthermore, the conclusions of Arora et al.[21] unveil an important consideration, which would not have been apparent without the qualitative nature of the study. Through unstructured interviews, the researchers identified many oral health terms used in educational materials that many participants did not understand. This theme within their research highlighted possible issues associated with current oral health educational materials as well as commonly used questionnaires in much oral health research.[13] Arora et al.[21] noted the importance of using appropriately selected language in educational materials as well as questionnaires to avoid assumptions about understanding of these words. Arora et al.[21] was the only article selected that discussed barriers to access via acceptability.[11] They highlighted the lack of cultural safety within oral health educational materials and how this issue is a barrier that must be removed for female caregivers to improve their OHL levels.[11,13,21]

There is a clear lack of critical theory within the oral health research discourse.[13] None of the selected articles discussed spatial barriers to oral health care, including transportation, which disproportionately affect low-income populations.[11] Based on research methods used and conclusions reached in the majority of the articles, a positivist paradigm dictates the dominant discourse on this health topic.[14-19] The minimal use of qualitative data collection approaches as well as the lack of critical theory used in the research articles selected emphasize the need for diversity in research methods to seek a deeper understanding of barriers that low-income female caregivers face in relation to their and their children's oral health.[11,13]

Power relations

The 7 articles that reflect the dominant discourse placed the health care provider in a position of power over those to whom they are providing care.[8,14-19] Recommendations and conclusions found in these articles reflected the responsibility of the health care provider to improve OHL levels within the target population. Due to the single, objective reality displayed, the female caregivers' perspectives were silenced.[8,14-19] This power dynamic can affect access to medical information and services as individuals who do not feel they have a choice in their medical treatments or services due to this power imbalance will avoid accessing services that could aid in improving their OHL.[11,21] In addition, this lack of power may prevent female caregivers from asking clarifying questions about oral health terminology encountered in this environment.[21]

The caregivers' opinions and subjective experiences were also not taken into consideration. The authors implied that all information required to help improve children's oral health can be obtained from strictly quantitative data.[8,14-19] Comparatively, the 2 articles that fit into a constructivist paradigm displayed a slightly better power dynamic between health care providers and the female caregivers as both articles used qualitative data to deepen understanding of individual perspectives.[9,21] They also used the information gathered during the interviews to guide further areas of research and generate possible suggestions for addressing barriers these women face in improving their OHL and therefore the health of their children.[9,13,21] Gender was not mentioned in any articles as a possible factor shaping power relations between the women and the health care provider, denoting the lack of critical theory.[9,13,21]

Cultural issues

Within the positivist articles, cultural variables such as race and socioeconomic status (SES) were identified as having an impact on OHL levels, but the research questions did not aim to seek further understanding of how these variables create barriers for the female caregivers.[8,14-17,19] Furthermore, within the recommendation and conclusion sections of these articles, the need to increase understanding of or address these cultural variables was not discussed or noted as worthy of consideration. In addition, possible solutions to help improve OHL levels within the target population were not considered.[8,14-16,18,19] Comparatively, the 2 articles that used a constructivist paradigm highlighted these cultural variables as barriers to accessing medical information and services.[9,13,21] They included suggestions to further investigate how these variables create barriers for the target population and how policy and programs might reduce them.[13,21] None of the articles selected employed a critical theory paradigm to discuss factors perpetuating health disparities that disproportionately affect this target population. Specifically, factors such as access to education and transportation were not acknowledged as issues that need to be addressed to improve the OHL levels of the female caregivers.[11,13] Race and SES were listed as barriers to OHL, but gender was never mentioned, even though all 9 articles specifically selected female caregivers as their study participants.

None of the articles explored the larger impact of the lack of value placed on oral health as a component of overall health within the broader medical community and among the public. This lack of value may restrict access to important information on oral health as well as to screening and preventive services. One article mentioned cultural safety as an aspect that needs to be addressed to assist low-income female caregivers in improving their OHL.[11,13] The dominant discourse in the oral health profession grossly overlooks cultural factors as barriers to medical information and services and lacks insight into how addressing these issues through the development of health policy and programming could aid in reducing health disparities for this population.[8,13-16,18,19]

As oral health is an integral component of overall health, policy developers and public health administrators must seek a deeper understanding of the current barriers low-income female caregivers face that impede access to oral health information and services.[10-12] The dominant paradigm within the oral health professional community reflects a positivist understanding of knowledge, which has an often-unconscious impact on the OHL levels of female caregivers.[13] This narrow perspective can limit understanding of broader social determinants of health and possible solutions for improving oral and overall health for target populations.[13] Using a different paradigm, such as constructivist, a different understanding of female caregivers' OHL can be developed. By collecting qualitative data and using this lens to examine multiple versions of reality and how these are socially constructed, researchers can develop a more complete and accurate perspective on the issues.[13]

Knowledge produced through a different paradigm may also give these female caregivers autonomy and power to speak for themselves regarding the unique challenges and barriers they face, and what they think should be done to address them. The collection and analysis of this data would allow stakeholders to develop a better understanding of the issues while improving power relations.[13]

With the knowledge of the potential impact that gaining insight using a critical theory lens can have on health outcomes, it is imperative that oral health and allied health care professionals improve their understanding of how to empower and advocate for low-income women to improve their OHL.[13] Without critical theory paradigms in research, it is difficult for health care providers (often part of the dominant culture) to understand how the status quo is perpetuating health disparities and how insights gained from critical theory can identify possible effective approaches to improving oral health.[13] Social justice and advocacy have the potential to help change female caregivers' behaviours resulting in improved ability to

access and navigate health care information and services, and ultimately improvements in women's and children's oral and overall health.[10,11,13] Future research should strive to generate information that reflects non-dominant discourses with the aim of improving power relations and cultural safety for optimal oral and overall health outcomes for target populations.[10,11,13]

CONCLUSION

As research underpins the oral health professions' core knowledge, values, and best practice guidelines, it is imperative that professional discourse include critical reflection on how the dominant research paradigm affects health disparities and cultural safety in practice environments. This knowledge should be used to enhance strategies that empower and advocate for female caregivers to improve their OHL levels.

CONFLICTS OF INTEREST

The author declares no known conflicts of interest.

REFERENCES

1. Canadian Dental Association. *The state of oral health in Canada*. Ottawa (ON): CDA; 2017. Available from: www.cda-adc.ca/stateoforalhealth/_files/TheStateofOralHealthinCanada.pdf
2. Rowan-Legg A & Canadian Paediatric Society. Oral health care for children—a call for action. *Paediatr Child Health*. 2022;18(1):37–43.
3. Vahid R, Quiñonez C, Allison P. The magnitude of oral health inequalities in Canada: findings of the Canadian Health Measures Survey. *Community Dent Oral Epidemiol*. 2013;41(6):490–98. doi: 10.1111/cdoe.12043.
4. Dye B, Vargas C, Lee J, Magar L, Tinanoff N. Assessing the relationship between children's oral health status and that of their mothers. *J Am Dent Assoc*. 2011;142(2):173–83. Available from: www.sciencedirect.com/science/article/pii/S0002817714614987
5. Northridge M, Schrimshaw E, Estrada I, Greenblatt A, Metcalf S, Kunzel C. Intergenerational and social interventions to improve children's oral health. *Dent Clin North Am*. 2017;61(3):533–48. doi: 10.1016/j.cden.2017.02.003
6. Sabbah W, Folayan MO, El Tantawi M. The link between oral and general health. *Int J Dent*. 2019;2019:7862923. https://doi.org/10.1155/2019/7862923
7. Szeto A, Harrison R, Innis S. Caries, iron deficiency and food security in low income, minority children. *Can J Dent Hyg*. 2012;46(4):215–20.
8. Alvey J, Divaris K, Lytle L, Vann WF, Jr, Lee JY. What child oral health-related behaviors can first-time mothers actualize? A pragmatic prospective study. *JDR Clin Trans Res*. 2020;5(4):366–75.
9. Maybury C, Horowitz AM, La Touche-Howard S, Child W, Battanni K, Qi Wang M. Oral health literacy and dental care among low-income pregnant women. *Am J Health Behav*. 2019;43(3):556–68. doi: 10.5993/AJHB.43.3.10.
10. King A. *Oral health—more than just cavities. A report by the Chief Medical Officer of Health*. Toronto (ON): Ministry of Health; 2012.
11. Burt B, Eklund S. *Dentistry, dental practice, and the community*. 7th ed. St. Louis (MO): Elsevier/Saunders; 2021.
12. Health Canada. Social Determinants of Health and Health Inequalities [Internet]. Available from: www.canada.ca/en/public-health/services/health-promotion/population-health/what-determines-health.html
13. Brown MEL, Dueñas AN. A medical science educator's guide to selecting a research paradigm: building a basis for better research. *Med Sci Educ*. 2020;30(1):545–53. https://doi.org/10.1007/s40670-019-00898-9
14. Divaris K, Lee JY, Baker AD, Vann WF, Jr. The relationship of oral health literacy with oral health-related quality of life in a multi-racial sample of low-income female caregivers. *Health Qual Life Outcomes*. 2011;9:108.
15. Lee JY, Divaris K, Baker AD, Rozier RG, Lee SY, Vann WF, Jr. Oral health literacy levels among a low-income WIC population. *J Public Health Dent*. 2011;71(2):152–60.
16. Lee JY, Divaris K, Baker AD, Rozier RG, Vann WF, Jr. The relationship of oral health literacy and self-efficacy with oral health status and dental neglect. *Am J Public Health*. 2012;102(5):923–29.
17. Sowmya KR, Puranik MP, Aparna KS. Association between mother's behaviour, oral health literacy and children's oral health outcomes: a cross-sectional study. *Indian J Dent Res*. 2021;32(2):147–52.
18. Vann WF, Jr, Lee JY, Baker D, Divaris K. Oral health literacy among female caregivers: impact on oral health outcomes in early childhood. *J Dent Res*. 2010;12:1395–1400.
19. Dieng S, Cisse D, Lombrail P, Azogui-Lévy S. Mothers' oral health literacy and children's oral health status in Pikine, Senegal: a pilot study. *PloS One*. 2021;15(1):e0226876 https://doi.org/10.1371/journal.pone.0226876
20. Nations MK, Calvasina PG, Martin MN, Dias HF. Cultural significance of primary teeth for caregivers in Northeast Brazil. *Cad Saude Publica*. 2008;24(4):800–808. Available from: www.scielosp.org/article/ssm/content/raw/?resource_ssm_path=/media/assets/csp/v24n4/10.pdf
21. Arora A, Nguyen D, Do QV, Nguyen B, Hilton G, Do LG, et al. "What do these words mean?": A qualitative approach to explore oral health literacy in Vietnamese immigrant mothers in Australia. *Health Educ J*. 2014;73(3):303–312. https://doi.org/10.1177/0017896912471051