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

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ABSTRACT

Objective: Despite the vast knowledge gained through research and public health surveillance, dental caries prevalence among low-income children remains high. The aim of this literature review is to identify assumptions made within existing empirical, constructivist and critical paradigms to determine how they impact knowledge produced and if these impacts have aided in perpetuating inequity or health disparities within this targeted population.

Method: The databases used included: EBSCOhost, PubMed and Web of Science. Search criteria included articles from peer-reviewed journals published in the last ten years including qualitative, quantitative and mixed methods studies. 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 oral health literacy levels and oral health status. Exclusion criteria included 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 seven of nine articles. Additional influence on Oral Health Literacy was noted from 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 as well as the public.

Discussion: Assumptions were identified within existing dominant paradigms that were determined to perpetuate inequity or health disparities verifying a link between caregivers' OHL levels and the oral health status of their children. It is critical all healthcare professionals improve their understanding of factors affecting caregiver's OHL.

Conclusion: Strategies that empower and advocate for women to improve their OHL levels should be developed.

Keywords: low-income female caregivers, oral health literacy, children's oral health, critical paradigms

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 ECC (early childhood caries) 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 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 all health care providers improve 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]

An established connection between female caregivers' oral health literacy (OHL) levels and the oral health status of their children has also been noted in the literature concluding that children of female caregivers with higher levels of OHL experience improved oral health outcomes comparatively.[7-9] With this knowledge it is critical oral and other healthcare professionals improve their understanding of how to empower and advocate for women to improve their OHL as these improvements can positively impact their behaviours, potentially resulting in improved ability to access and navigate healthcare information and services, to improve their and their children's oral and overall health status.[5,10-12] The lack of knowledge of the oral systemic link of both the general public and medical professionals contributes to the reproduction of dominant cultural norms that do not value oral health as a significant aspect 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 healthcare including organizational structures and systems.[13] It is critical to note how these paradigms dictate what kind of knowledge is being sought out in research as well as how this knowledge is being generated, such as the dominant research methods used within a healthcare profession. The aim of the literature review is to identify assumptions made within existing empirical, constructivist and/or critical paradigms to determine how they impact knowledge produced and if these impacts have aided in perpetuating inequity or health disparities within this targeted population.

METHODS

The databases used included: EBSCOhost, PubMed and Web of Science. Search criteria included articles from peer-reviewed journals published in the last ten years including qualitative, quantitative and mixed methods studies. 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 oral health literacy levels and oral health status. Exclusion criteria included non-English studies and studies that did not include female caregivers.

RESULTS

Nine primary research articles were selected, all of which explored female caregivers' oral health literacy levels and possible impacts this may have on their children's oral health. Seven out of the nine selected 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 displayed a critical theory lens (*Table 1*).

Table 1.

Positivist Articles	Constructivist Articles	Critical Theory Articles
Alvey, J., Divaris, K., Lytle, L., Vann, W. F., Jr, & Lee, J. Y. What Child Oral Health-Related Behaviors Can First-time Mothers Actualize? A Pragmatic Prospective Study. *JDR clinical and translational research*, 2020;*5*(4):366–375. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7495947/ Divaris, K., Lee, J.Y., Baker, A.D., & Vann, W.F. 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. https://pubmed.ncbi.nlm.nih.gov/22132898/ Lee, J.Y., Divaris, K., Baker, A.D., Rozier, R.G., Lee, S.Y., & Vann, W.F. Jr. Oral health literacy levels among a low-income WIC population. *J Public Health Dent*. 2011;71(2):152-60. https://pubmed.ncbi.nlm.nih.gov/21774139/ Lee, J., Divaris, K., Baker, A., Rozier, R., Vann, W. The relationship of oral health literacy and self-efficacy with oral health status and dental neglect. *American Journal of Public Health.2012;*102(5):923-929. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3267012/ Sowmya, K.R., Puranik, M.P., & Aparna, K.S. 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):147-152. https://pubmed.ncbi.nlm.nih.gov/34810380/ Vann, W.F Jr., Lee, J.Y., Baker, D., & Divaris, K. Oral health literacy among female caregivers: impact on oral health outcomes in early childhood. *J Dent Res.* 2010;(12), 1395-400. https://pubmed.ncbi.nlm.nih.gov/20924067/ 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). https://doi.org/10.1371/journal.pone.0226876	Maybury, C., Horowitz, A.M., 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):556-568. doi: 10.5993/AJHB.43.3.10. Arora, A., Nguyen, D., Do, Q. V., Nguyen, B., Hilton, G., Do, L. G., & Bhole, S. 'What do these words mean?': A qualitative approach to explore oral health literacy in Vietnamese immigrant mothers in Australia. *Health Education Journal*. 2014;*73*(3):303–312. https://doi.org/10.1177/0017896912471051	*None*

Findings highlighted the positivist paradigm as the dominant research paradigm (evident in seven out of nine articles analyzed) in low-income female OHL focused research. Additional influence on OHL was noted from oral health social processes such as the larger impact of the lack of value placed on oral health as a component of overall health within the broader medical community as well as the public. The impact of having a dominant positivist paradigm also influences larger health systems and communities both leading to health inequities through the identified gaps in adequately addressing relevant social determinants of health contributing to health inequities in this population. Geographic locations of the studies included Canada, U.S, 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 oral health literacy levels and oral health status. 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 improved using quantitative measures). These omissions and assumptions were determined to aid in perpetuating inequity or health disparities.

DISCUSSION

The aim of this literature review was to identify assumptions made within existing empirical, constructivist and critical paradigms to determine how they impact knowledge produced and if these impacts have aided in perpetuating inequity or health disparities within this targeted population. These discussions will analyze the types of research paradigms found in the articles selected and how they may impact or contribute to current health disparities. Discussions

will include an analysis of articles that display positivist and constructivist paradigms as well as issues related to power and cultural factors that stemmed from these paradigms.

Positivist Paradigm

Based on the search parameters, many articles used a positivist paradigm as seven out of the nine selected articles reviewed used exclusively quantitative data to form their conclusions.[8,13-16] The articles all sought information with the assumption that there is one objective reality and knowledge should be gained though the exclusive use of measurement tools. Examples of common tools used in the various studies included, oral examinations using the DMFT (Decayed, Missing & Filled Teeth) Index as well as oral health literacy questionnaires using varying Likert scales. [8,13,15-19] In addition to the dominant type of research methods used, these articles also reflected a positivist paradigm in their conclusions. A victim-blaming approach towards mothers was identified, which is perpetuated within 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, which impact health inequities and contribute to their children's poor oral health status.[20] These assumptions and biases can negatively impact access to healthcare services and information.[8,20] Although the studies collected data associated with socioeconomic status (e.g., level of education, etc.), the articles simply concluded that an increase in mothers' oral health literacy (OHL) is critical to improve oral health status of their children.[8,13] These assumptions and biases can negatively impact access to healthcare services and information.[8,20] Although the studies collected data associated with socioeconomic status (e.g., level of education, etc.), the articles simply concluded that an increase in mothers' oral health literacy (OHL) is critical to improve oral health status of their children.[8,13,15-19]

There was no discussion of barriers these low-income female caregivers face which limit opportunities for higher education or access to dental health materials/information (which is associated with higher OHL levels), or any suggested approaches to addressing factors that impact these women's current OHL levels.[13] These articles list awareness as a barrier to the target population accessing services and programs (higher OHL increases likelihood of mothers engaging in preventive health measures/activities) but do not go on to discuss the importance of understanding and addressing these issues as a possible solution for improving female caregiver's OHL levels and their children's oral health status.[11,13] There was no discussion of how broader social determinants of health, such as social status, have created barriers for these female caregivers to improve their current OHL levels. All articles noted also had discourse from one perspective (the healthcare provider) limiting considerations and implying solutions to this health issue should only involve dental healthcare providers improving OHL levels of female caregivers. This highlights a single reality used in a positivist paradigm.[8,13-19] This paradigm perpetuates and reinforces a system where healthcare providers hold the control over others' health.[13]

Constructivist Paradigm

Out of the nine articles selected, two displayed aspects aligning with a constructivist paradigm.[9,21] Using qualitative research methods, these two articles were able to help the reader understand a socially constructed reality.[9,13,21] It was clear the articles assumed 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 used direct quotes from the women to describe major themes highlighted from the analysis brought forward directly from the

participants. In addition to the research methods used in these two studies, the discourse used to formulate conclusions also reflects a constructivist paradigm.[9,13,21] Maybury et al.,[9] concluded, "to decrease caries rates, policies and programs must be implemented to increase the OHL of low-income pregnant women". Through an increase in understanding of varying perspectives, this paradigm allows researchers to explore ways in which healthcare providers and administrators can improve access to oral health information by creating policies and programs that target current barriers negatively impacting health status and perpetuating health disparities for this targeted 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 at improving access to health information as an approach to improve 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 were able to identify many dental terms used in educational material that many participants did not understand. This identified a theme within their research which highlighted possible issues associated with current dental health educational material as well as commonly used questionnaires used in much oral health research.[13] Arora et al.,[21] notes the importance of appropriately selected language used in educational material 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 highlight the lack of cultural safety within oral health educational material and how this is an aspect that needs to be addressed and changed to help remove barriers to female caregivers' ability 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 dental care including transportation which disproportionately affect low-income populations.[11] Based on research methods used and formulated conclusions reached in the majority of the articles on oral health literacy, a positivist paradigm dictates the dominant discourse surrounding this health topic.[13-18] 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 low-income female caregivers face in relation to their and their children's oral health.[11,13]

Power Relations

The seven articles that reflect the dominant discourse show a clear power relation which places the health care provider in a position of power over those to whom they are providing care.[13-19] Within the dominant discourse, recommendations and conclusions found in the articles reflected the responsibility of the health care provider to improve OHL levels for the target population. Due to the single, objective reality displayed, the female caregiver's perspectives are silenced. [13-19] This power dynamic can impact 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 which could aid in the improvement of OHL.[11,21] Also, this lack of power may inhibit mothers from asking clarifying questions regarding dental terminology encountered in this environment.[21] The mothers' opinions and subjective experiences were also not taken into consideration. The authors imply that all information required to help improve children's poor oral health can be obtained from strictly quantitative

data. [13-19] Comparatively, the two articles that reflect a constructivist paradigm display a slightly better power dynamic between health care providers and the female caregivers as both articles use qualitative data to deepen understanding of their individual perspectives.[9,21] They also use 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 status of their children.[9,13,21] Gender was not mentioned as a factor in any articles as a possible impact of power relations between the women and the health care provider, denoting the lack of critical theory.[9,13,21]

Cultural Issues

Within the articles that display a positivist paradigm, cultural variables such as, race and socio-economic status (SES) are identified as having an impact on OHL levels, but the research questions do not aim to seek further understanding of how these variables create barriers for these women.[8,13-17,19] Furthermore, within the recommendation and conclusion sections of these articles, the need to increase understanding of or address these cultural variables were not discussed or noted as issues worthy of consideration. Also, possible solutions to help improve OHL levels for the targeted population were not considered.[8,13-16,18,19] Comparatively, the two articles that reflect a constructivist paradigm highlight these cultural variables as barriers to access to medical information and services.[9,13,21] They include suggestions to further investigate how these variables create barriers as well as address these issues when developing policy and programs for this targeted population.[13,21] No article selected displayed a critical theory paradigm as none discussed factors perpetuating health disparities that disproportionately impact this target population. Specifically, factors such as access to education and transportation were not

acknowledged within the articles as issues that need to be addressed to successfully improve the OHL levels of the female caregivers.[11,13] Race and SES were listed as barriers to OHL levels, but gender was never mentioned as an impacting factor, even though all nine articles specifically selected female caregivers as their participants for their studies. None of the articles mentioned the larger impact of the lack of value placed on oral health as a component of overall health within the broader medical community as well as the public as an impacting factor. This lack of value restricts access to important information regarding oral health as well as screening and preventive services. One out of the nine articles mentioned cultural safety as an area that needs to be improved to assist low-income female caregivers in improving their OHL levels.[11,13] The dominant discourse related to the dental profession grossly under addresses cultural factors as barriers to medical information and services as well as lacks insight into how addressing these issues within the development of health policy and programming should be used to aid in improving health disparities for this population. [8,13-16,18,19]

As oral health is an integral component of overall health, its critical policy developers and public health administrators have a deeper understanding of the current barriers low-income female caregivers face that impact access to oral health information and services.[10-12] Having the dominant paradigm within the dental professional community reflect a positivist paradigm 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 to barriers faced in improving oral and overall health for target populations.[13] Using a different paradigm, such as constructivist, a different understanding regarding female caregivers' oral health literacy can be developed. By collecting qualitative data and using this lens to illuminate multiple versions of reality and how these are socially constructed, researchers can reach a more complete

and accurate perspective.[13] Knowledge produced through a different paradigm can help promote giving these female caregivers autotomy 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 of gaining insight using a critical theory lens can have on health outcomes, it is imperative dental and allied healthcare 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 current health disparities and how insights gained from critical theory can promote possible effective approaches to improving oral health status.[13] Through social justice and advocacy, these perspectives have the potential to help change female caregivers' behaviours resulting in improved ability to access and navigate healthcare information and services, and ultimately achieve improvements in women 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 as strategies for optimal oral and overall health outcomes for targeted populations.[10,11,13]

CONCLUSION

As research guides the oral health professions core knowledge, values, and best practice guidelines, it is imperative professional discourse includes critical reflection of how the current dominant discourse impacts health disparities and cultural safety in our practice environments. This knowledge should be used to improve strategies that empower and advocate for women to improve their OHL levels.

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CONFLICT OF INTEREST

The author declares no known conflicts of interest.

PRACTICE RELEVANCE

1. Oral health professionals can improve their understanding of how to empower and advocate for low-income women to improve their OHL.
2. Through social justice and advocacy, the change in perspective has the potential to help change female caregivers' behaviours resulting in improved ability to access and navigate healthcare information and services, and ultimately achieve improvements in women and children's oral and overall health.

REFERENCES

1. Canadian Dental Association. The State of Oral Health in Canada. 2017. https://www.cda-adc.ca/stateoforalhealth/_files/TheStateofOralHealthinCanada.pdf

2. Anne Rowan-Legg, & Canadian Paediatric Society. (2022) Oral health care for children – a call for action. *Paediatr Child Health*. 18(1): 37-43. https://cps.ca/documents/position/oral-health-care-for-children

3. Vahid, R., Quinonez, 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). 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. *The Journal of the American Journal Association*. 2011;142(2):173-183. www.sciencedirect.com/science/article/pii/S0002817714614987

5. Northridge, M., Schrimshaw, E., Estrada, I., Greenblatt, A., Matcalf, S., & Kunzel, C. Intergenerational and social interventions to improve children's oral health. *The Journal of Dental Clinics of North America.* 2017;61(3):533-548. doi: 10.1016/j.cden.2017.02.003

6. Sabbah,W., Folayan, M. O., & El Tantawi, M. The Link between Oral and General Health. *International journal of dentistry*. *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. *Canadian Journal of Dental Hygiene*. 2012;46(4):215–220.

8. Alvey, J., Divaris, K., Lytle, L., Vann, W. F., Jr, & Lee, J. Y. What Child Oral Health-Related Behaviors Can First-time Mothers Actualize? A Pragmatic Prospective Study. *JDR clinical and translational research*, 2020;*5*(4):366–375. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7495947/

9. Maybury, C., Horowitz, A.M., 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):556-568. doi: 10.5993/AJHB.43.3.10.

10. King, A. Oral health – more than just cavities. 2012. https://www.health.gov.on.ca/en/common/ministry/publications/reports/oral_health/oral_health.pdf

11. Burt, B., & Eklund, S. Dentistry, dental practice, and the community 7th edition. 2021. St. Lous, MO: Elsevier/Saunders.

12. Health Canada. Social Determinants of Health and Health Inequalities. 2020. https://www.canada.ca/en/public-health/services/health-promotion/population-health/what-determines-health.html

13. Brown, M.E., Dueñas, A.N. A Medical Science Educator's Guide to Selecting a Research Paradigm: Building a Basis for Better Research. *Med.Sci.Educ.* 2020;30, 545–553. https://doi.org/10.1007/s40670-019-00898-9

14. Divaris, K., Lee, J.Y., Baker, A.D., & Vann, W.F. 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. https://pubmed.ncbi.nlm.nih.gov/22132898/

15. Lee, J.Y., Divaris, K., Baker, A.D., Rozier, R.G., Lee, S.Y., & Vann, W.F. Jr. Oral health literacy levels among a low-income WIC population. *J Public Health Dent*. 2011;71(2):152-60. https://pubmed.ncbi.nlm.nih.gov/21774139/

16. Lee, J., Divaris, K., Baker, A., Rozier, R., Vann, W. The relationship of oral health literacy and self-efficacy with oral health status and dental neglect. *Americal Journal of Public Health.2012;*102(5):923-929. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3267012/

17. Sowmya, K.R., Puranik, M.P., & Aparna, K.S. 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):147-152. https://pubmed.ncbi.nlm.nih.gov/34810380/

18. Vann, W.F Jr., Lee, J.Y., Baker, D., & Divaris, K. Oral health literacy among female caregivers: impact on oral health outcomes in early childhood. *J Dent Res.* 2010;(12), 1395-400. https://pubmed.ncbi.nlm.nih.gov/20924067/

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). https://doi.org/10.1371/journal.pone.0226876

20. Nations, M., Calvasina, P., Martin, M., Dias, H. Cad. Saude Publica. 2008;24(4). Cultural significance of primary teeth for caregivers in Northeast Brazil

https://www.scielosp.org/article/ssm/content/raw/?resource_ssm_path=/media/assets/csp/v24n4/10.pdf

21. Arora, A., Nguyen, D., Do, Q. V., Nguyen, B., Hilton, G., Do, L. G., & Bhole, S. 'What do these words mean?': A qualitative approach to explore oral health literacy in Vietnamese immigrant mothers in Australia. *Health Education Journal*. 2014;*73*(3):303–312. https://doi.org/10.1177/0017896912471051