Knowledge of mothers and women of child-bearing age of the importance of iodine for the health of children: synopsis of a systematic review

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Introduction

Iodine is an essential micronutrient crucial for thyroid hormone synthesis, particularly during pregnancy when demand increases by approximately 50%. Despite the recognized importance of iodine for maternal and fetal health, iodine deficiency disorders (IDD) continue to pose significant risks, including pregnancy loss, infant mortality, neonatal hypothyroidism, and neurodevelopmental impairments. The World Health Organization (WHO) has identified iodine deficiency as a preventable cause of brain damage, advocating for universal salt iodization (USI) as a key strategy. However, recent evidence suggests that iodine deficiency remains prevalent among women both periconceptually and in pregnancy in many countries, indicating the need for additional interventions to improve iodine status in this group and support brain development in utero and cognitive outcomes in childhood.

This systematic review had two primary objectives:

1. Evaluate the knowledge of mothers and women of childbearing age regarding the importance of iodine for children's health;
2. Assess the effectiveness of educative strategies in increasing iodine knowledge in women.

Methods

Eligibility criteria included studies assessing iodine knowledge or educative strategies targeting mothers or women of child-bearing age. Original research papers from peer-reviewed journals were considered, and data extraction focused on questionnaire details and knowledge levels. Studies published between 1990 and 2024 were included, and searches were conducted in PubMed, Web of Science, and Scopus (latest search date 16 January 2024). Data synthesis was conducted narratively due to heterogeneity in study designs, and quality assessment included validation scores for questionnaires.

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Results

Fourteen studies involving 6,565 participants, predominantly pregnant women, were included. Studies were conducted in Ireland, Norway, Portugal and the UK; Iran; China; Ethiopia, and Australia. Most studies reported low levels of iodine knowledge, with strong variations in assessment methods. Educative strategies, primarily randomized controlled trials, showed a significant improvement in knowledge scores but lacked evidence of improved iodine status. Validation scores for questionnaires were generally low, indicating a need for stronger study design and documentation.

Discussion

The findings highlight the critical need to address inadequate iodine knowledge as a public health priority, particularly as most participants across studies had minimal exposure to iodine information from healthcare professionals. Additionally, most participants included in this review were pregnant women, emphasizing the importance of evaluating knowledge among women planning to conceive and women of child-bearing age in general.

The review identifies global disparities in iodine knowledge and nutrition policies, with countries like the United Kingdom facing challenges due to the lack of legislative mandates for iodine fortification.[1] In contrast, countries like Australia have implemented successful fortification programs, indicating the effectiveness of policy interventions in improving iodine status.[2] However, persistent gaps in knowledge despite fortification underscore the need for comprehensive public health strategies that combine fortification with targeted educational campaigns.

Education plays a pivotal role in enhancing iodine knowledge, as demonstrated by studies in Ethiopia and Iran using community-based iodine nutrition education program or digital strategies like text messages. All studies showed a significant increase in knowledge post-intervention. However, increased knowledge did not always translate into improved iodine status, indicating the influence of various socio-cultural and environmental factors. Adopting a more comprehensive approach to planning health promotion should be considered.

Moreover, the review highlights methodological challenges in assessing iodine knowledge, including variations in questionnaire design and validity assessment. Standardization of assessment techniques and methods to capture data, as well as the development of a core outcomes set, are recommended to enhance comparability and facilitate evidence synthesis in future research.

Conclusion

In conclusion, the systematic review reveals a concerning lack of iodine knowledge among mothers and women of childbearing age, necessitating urgent action from public health authorities. Educative strategies show promise in addressing knowledge gaps, but further research is needed to evaluate their effectiveness in improving iodine status. Standardization of assessment techniques and methods to capture data is an essential step towards enhancing qualitative research quality and informing evidence-based interventions to combat iodine deficiency effectively.

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1 Bath SC, Button S, Rayman MP. Availability of iodised table salt in the UK - is it likely to influence population iodine intake? Public Health Nutr. 2014 Feb;17(2):450-4. doi: 10.1017/S1368980012005496. Epub 2013 Jan 16. PMID: 23324480; PMCID: PMC10282266.

2 Charlton, K. E., Yeatman, H., Brock, E., Lucas, C., Gemming, L., Goodfellow, A., & Ma, G. (2013). Improvement in iodine status of pregnant Australian women 3 years after introduction of a mandatory iodine fortification programme. Preventive Medicine, 57(1), 26–30. www.doi.org/10.1016/J.YPMED.2013.03.007