







ORIGINAL

Cultural Insights and Local Food Traditions in Designing Health Literacy Tools for Anemia Prevention

Perspectivas culturales y tradiciones alimentarias locales en el diseño de herramientas de alfabetización sanitaria para la prevención de la anemia

Dianita Widya Gandhi¹ , Citrakesumasari² , Indra Fajarwati Ibnu³ , Hasnawati Amqam⁴ , Sudirman Nasir³ , Sitti Bulkis⁵ 

¹Doctoral Programme in Public Health Sciences, Faculty of Public Health, Hasanuddin University. Indonesia.

²Department of Nutrition, Faculty of Public Health, Hasanuddin University. Indonesia.

³Department of Health Promotion, Faculty of Public Health, Hasanuddin University. Indonesia.

⁴Department of Environmental Health, Faculty of Public Health, Hasanuddin University. Indonesia.

⁵Faculty of Agriculture, Hasanuddin University. Indonesia.

Cite as: Gandhi DW, Citrakesumasari, Fajarwati Ibnu I, Amqam H, Nasir S, Bulkis S. Cultural Insights and Local Food Traditions in Designing Health Literacy Tools for Anemia Prevention. Salud, Ciencia y Tecnología. 2025; 5:2154. <https://doi.org/10.56294/saludcyt20252154>

Submitted: 24-04-2025

Revised: 10-07-2025

Accepted: 10-09-2025

Published: 11-09-2025

Editor: Prof. Dr. William Castillo-González 

Corresponding Author: Dianita Widya Gandhi 

ABSTRACT

Introduction: iron deficiency anemia is a significant health problem, especially in women of reproductive age and brides-to-be. Behavioural factors, culture, and local food utilisation play an important role in anemia prevention efforts. Educational media such as leaflets based on local culture can improve health literacy.

Objective: to review the literature on the influence of behaviour, culture and local food in the development of a health literacy leaflet for anemia prevention.

Method: this study used descriptive literature review method with PRISMA approach. Data were collected from four major databases (PubMed, Scopus, ProQuest, and Google Scholar) using relevant keywords. Inclusion criteria included articles published in the last 10 years (2014-2024) related to health literacy and anemia prevention.

Results: the 29 articles reviewed, it was found that leaflet-based education with content adapted to local culture was effective in improving community knowledge and behaviour towards anaemia prevention. Some studies highlighted the importance of utilising local foods such as green leafy vegetables, seaweed, and local meat as sources of iron.

Conclusions: the use of local culture-based health literacy leaflets can be an effective strategy in the prevention of anemia in brides-to-be. Interventions that consider cultural factors and community behaviour are expected to increase the effectiveness of health literacy programmes in a sustainable manner.

Keywords: Anemia Prevention; Health Literacy; Local Food Utilization; Cultural-Based Education; Behavioural Intervention.

RESUMEN

Introducción: la anemia por deficiencia de hierro es un problema de salud importante, especialmente en mujeres en edad reproductiva y futuras novias. Los factores conductuales, la cultura y el uso de los alimentos locales desempeñan un papel importante en los esfuerzos de prevención de la anemia. Los medios educativos, como los folletos basados en la cultura local, pueden mejorar los conocimientos sobre salud.

Objetivo: revisar la literatura sobre la influencia de la conducta, la cultura y los alimentos locales en la elaboración de un folleto informativo sobre salud para la prevención de la anemia.

Método: este estudio utilizó un método de revisión descriptiva de la literatura con el enfoque PRISMA. Los datos se recopilaron de cuatro bases de datos principales (PubMed, Scopus, ProQuest y Google Scholar) utilizando palabras clave relevantes. Los criterios de inclusión fueron artículos publicados en los últimos 10 años (2014-2024) relacionados con la alfabetización en salud y la prevención de la anemia.

Resultados: de los 29 artículos revisados, se observó que la educación basada en folletos con contenidos adaptados a la cultura local era eficaz para mejorar los conocimientos y el comportamiento de la comunidad en relación con la prevención de la anemia. Algunos estudios destacaron la importancia de utilizar alimentos locales como las verduras de hoja verde, las algas y la carne local como fuentes de hierro.

Conclusiones: el uso de folletos de alfabetización sanitaria basados en la cultura local puede ser una estrategia eficaz para la prevención de la anemia en las futuras novias. Se espera que las intervenciones que tienen en cuenta los factores culturales y el comportamiento de la comunidad aumenten la eficacia de los programas de alfabetización sanitaria de manera sostenible.

Palabras clave: Prevención de la Anemia; Alfabetización Sanitaria; Utilización de Alimentos Locales; Educación Basada en la Cultura; Intervención Conductual.

INTRODUCTION

Women are particularly vulnerable to iron deficiency anaemia due to factors such as monthly menstruation and poor dietary intake.⁽¹⁾ This condition is associated with various health complications, including heart disease, reduced work productivity, premature birth, postpartum haemorrhage, and increased risk of infection. Infants born to anaemic mothers often experience low birth weight, impaired cognitive development, and weakened immunity.⁽²⁾ Anaemia primarily results from iron deficiency, which can be addressed through dietary intake or, when necessary, medical supplementation and intravenous therapy.⁽³⁾ This deficiency often coexists with other micronutrient insufficiencies.⁽⁴⁾ Addressing these challenges requires effective health literacy interventions that can improve behavioural practices and encourage adequate nutrient intake to prevent anaemia.⁽⁵⁾ Health literacy in this context refers to an individual's ability to access, understand, and apply health-related information in daily life, particularly for making informed dietary and lifestyle choices.

At the global level, organisations such as UNICEF promote nutrition education programmes that aim to make healthy foods more accessible and encourage behavioural change through communication strategies.⁽⁶⁾ Women have unique nutritional needs throughout their life cycle, especially before and during pregnancy. Meeting these needs is critical for preventing anaemia, pre-eclampsia, and other complications. However, many women still experience poor nutritional status, often due to limited access to food, gender inequality, and social norms that restrict decision-making autonomy regarding nutrition.⁽⁶⁾ Evidence suggests that nutrition education focusing on iron-rich foods, vitamin B12, folic acid, and a balanced diet can improve women's health outcomes. Furthermore, integrating the use of local food sources—such as ganemo, husbandry products, fish cane, and seaweed—has been shown to be a culturally relevant and effective way to improve haemoglobin levels and prevent anaemia.⁽⁷⁾

Educational media such as leaflets can serve as practical tools for health promotion. When designed with a local culture-based approach—using local languages, symbols, and community values—leaflets are more easily understood, better received, and more sustainable in communities with limited access to digital or mass media information.⁽⁸⁾ A culture-based approach in this article refers to incorporating community-specific knowledge, traditions, and practices into health literacy materials to increase their acceptance and effectiveness.

Despite the potential of health literacy interventions, limited research has synthesised strategies for integrating cultural elements and local food resources into the design of educational tools such as leaflets. Most existing studies have either emphasised biomedical aspects of anaemia prevention or discussed cultural dimensions in isolation, without providing a framework for practical application. This article therefore aims to review the literature on the role of behaviour, culture, and local food in developing health literacy leaflets for anaemia prevention, with a particular focus on women of reproductive age and brides-to-be. By synthesising evidence from nutrition science, cultural studies, and health promotion, this article seeks to contribute a framework for designing culturally appropriate and sustainable community-based interventions.

METHOD

This study employed a literature review with a descriptive approach to analyse the relationship between behaviour, culture, and local food in anaemia prevention. The methodology followed several stages, as described below:

Data Collection

Literature searches were conducted from October to December 2023 using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Four electronic databases were accessed: PubMed, Scopus (ScienceDirect), ProQuest, and Google Scholar. The search strategy used a combination of keywords, including “*anaemia prevention*”, “*health literacy*”, “*local food*”, and “*behavioural intervention*”. The inclusion criteria were structured according to the Population, Intervention, Comparison, Outcome, and Study Design (PICOS) framework, and limited to publications within the last ten years (2014-2024). Eligible literature consisted of peer-reviewed journal articles, reports from international organisations, and books relevant to the topic.

Data Analysis

The selected literature was analysed using a thematic approach. This involved identifying and categorising recurring themes such as local food utilisation, educational media design, and cultural factors influencing health behaviour. Both qualitative and quantitative findings were synthesised to provide an integrated perspective.

Validation

To ensure validity, findings were cross-checked across multiple sources and further reviewed through consultation with public health and nutrition experts.

RESULTS

The findings are presented in descriptive narratives that combine quantitative and qualitative evidence, with an emphasis on their relevance to the development of health literacy leaflets for anaemia prevention. This methodological approach is expected to provide a comprehensive understanding of how behaviour, culture, and local food can be optimised in the design of effective, culturally appropriate educational media.

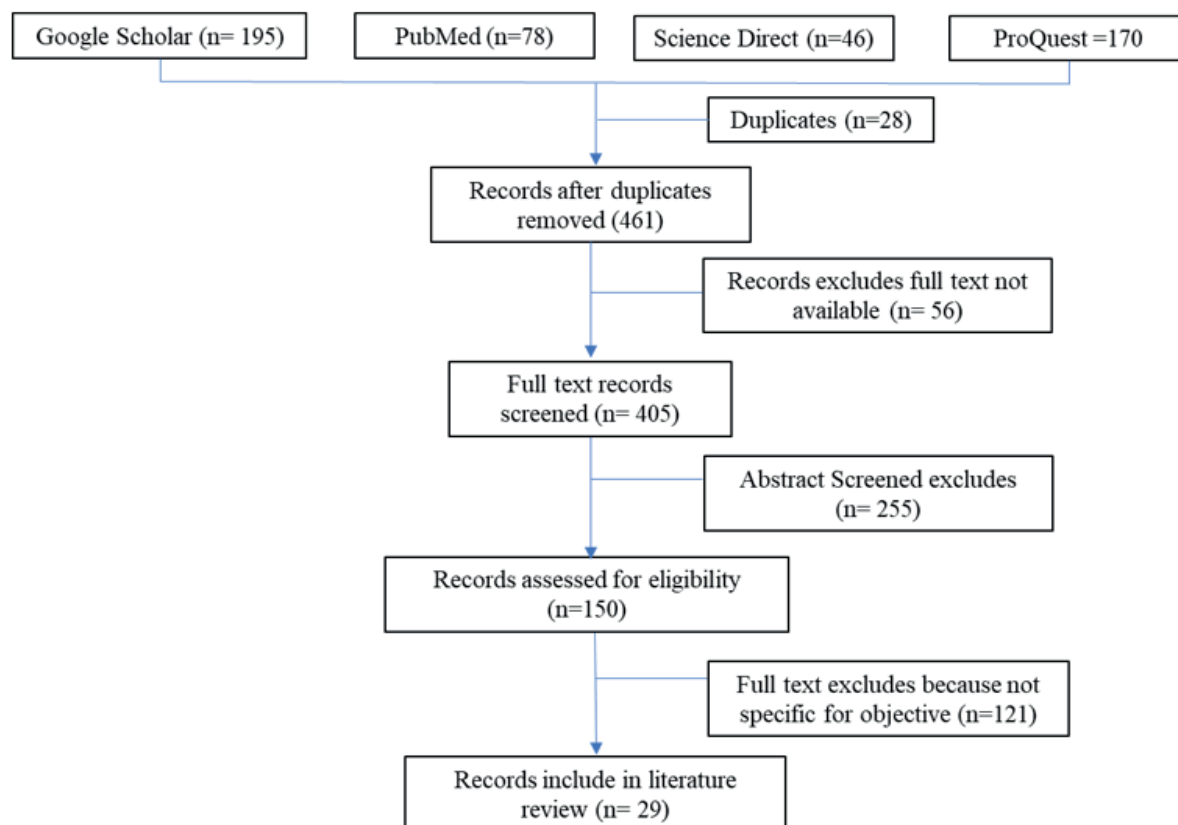


Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)

A total of 29 journal articles met the inclusion criteria and were systematically reviewed. The reviewed studies varied in setting, population, and intervention strategies related to anemia prevention. Several studies focused on brides-to-be. For example, research conducted in Cinere Sub-district, West Java, evaluated the effect of reproductive health counselling and the provision of iron supplementation, while another study at Puskesmas Toboali examined the association between dietary habits, iron supplement intake, and anemia incidence. A Participatory Action Research study in East Metro demonstrated improvements in literacy among

brides-to-be through interactive interventions.

Other studies targeted women of childbearing age and adolescent girls. One study in an urban setting investigated anaemic women of reproductive age, while another in a rural community applied empowerment strategies using leaflet-based education. Research conducted in a university setting highlighted anemia prevention among adolescent female students. Additionally, three studies specifically assessed the use of culture-based educational media—including booklets and leaflets—adapted to local contexts. These interventions were found to be particularly effective in areas with high anemia prevalence, enhancing both knowledge and community acceptance.

Overall, the majority of the 29 studies employed cross-sectional or quasi-experimental designs. The study populations were predominantly adolescent girls and women of reproductive age. Educational media such as leaflets, when culturally tailored, consistently demonstrated positive outcomes in increasing awareness and improving anemia prevention behaviors

Table 1. Literature Study on Behaviour and Culture and Local Food in the Development of Health Literacy Leaflet on Anaemia Prevention

No	Author	Journal	Study Objective	Study Sample (Number of Characteristics)	Study Design	Study Results
1	Rinnanik al. ⁽⁹⁾	Journal of Community Service	creating a sakinah family by providing knowledge, understanding and skills in married life	25 couples from 3 sub-districts (Way Jepara, Braja Selehah, Labuhan Ratu)	Quantitative descriptive	Bride-to-be, Mental Readiness, Knowledge, Social, Economic
2	Nurainun al. ⁽¹⁰⁾	Journal of Education Science	Analysing the marriage readiness of prospective brides and improving marriage readiness through premarital guidance	35 pairs of prospective brides (70 people) with purposive random sampling technique	Quantitative descriptive	Emotional readiness, social readiness, role readiness, financial readiness
3	Miatu Zulaizet al. ⁽¹¹⁾	JMSWH Journal of Midwifery Science and Women's Health, 2023	Analysing the effect of health education on increasing the knowledge of prospective brides about premarital health	All couples of prospective brides in PUSTU Sendang Dajah Labang District Bangkalan Regency as many as 98 pairs of prospective brides	Quasi Experiment with One Group Pretest-Posttest design	There is an effect of health education on increasing the knowledge of prospective brides about premarital health (p=0,000). It is recommended to expand the target of premarital health promotion with innovative methods so that the message is well received.
4	Astuti et al. ⁽¹²⁾	SENTRI: Journal of Scientific Research, 2023	Knowing the effect of counselling, reproductive health examination, and provision of blood supplement tablets on reproductive health awareness	30 respondents of bride-to-be at KUA Cinere District	Quasi-Experimental with Pretest-Posttest	There is a significant effect of counselling, reproductive health examination, and blood supplement tablets on the knowledge and awareness of reproductive health of prospective brides (p=0,000).

5	Sri Rahayu Mastuti et al. ⁽¹³⁾	SENTRI: Journal of Scientific Research, 2023	Knowing the relationship between SEZ, dietary habits, and iron supplement consumption with anaemia in brides-to-be at Puskesmas Toboali.	All brides-to-be at Puskesmas Toboali, 63 respondents	Cross-sectional	There is a relationship between dietary habits ($p=0,013$) and iron consumption ($p=0,009$) with anaemia. There was no association of SEZ with anaemia ($p=0,059$).
6	Novi Hadianti Azhari et al. ⁽¹³⁾	Indonesian Journal of Adult and Community Education, 2020	Knowing the effectiveness of premarital marriage guidance in improving marriage readiness	60 prospective brides, 40 samples from Kemenag Bandung who participated in premarital guidance	Questionnaire	The level of marriage readiness of the guidance participants was 68 %. The accuracy of premarital guidance objectives 19,23 %, the quality of the process 70 %. There is a positive relationship between the purpose and quality of the process with readiness to marry although not significant.
7	Mira Dahlia et al. ⁽¹⁴⁾	SENTRI: Journal of Scientific Research, 2023	Knowing the relationship between menstrual cycle, food intake, and nutritional status with anaemia in bride-to-be	68 brides-to-be at Puskesmas Toboali	Cross-sectional	There is no relationship between menstrual cycle and anaemia ($p=0,337$), there is a relationship between food intake and anaemia ($p=0,001$), and there is no relationship between nutritional status and anaemia ($p=0,734$).
8	Alfiyana Yuliasari et al. ⁽¹⁴⁾	Action to the Community Journal of Community Service, 2023	Educating brides-to-be on marital dynamics and stunting prevention through bridal classes	18 pairs of brides-to-be in East Metro	Participatory Action Research (PAR)	There was an increase in the average score of knowledge before (65) and after (74,5) counselling. Bride-to-be class increased knowledge about marital dynamics and stunting prevention.
9	Murniati (Indonesia)	Indonesian Health Promotion Publication Media (MPPKI), 2023	Analysing factors influencing Tetanus Toxoid immunisation in brides-to-be	All brides-to-be in Banda Sakti sub-district, Lhokseumawe, 42 people	Mix Methods: Quantitative and qualitative	Knowledge and attitude influenced Tetanus Toxoid immunisation. Belief factor became a barrier because it was considered not halal.
10	Tadesse AW et al. ⁽¹⁵⁾	BMC Public Health, 2019	Exploring factors influencing anaemia in women of reproductive age (WRA) in Nepal	6414 WRA from the Nepal Demographic and Health Survey 2016	Cross-sectional with spatial analysis	Associated factors: sterilisation (aOR: 3,61), low education (aOR: 1,99), middle social class (aOR: 1,65). Protective factors: age >35 years (aOR: 0,51), hormonal contraception (aOR: 0,63). Anaemia-prone areas in southern Terai Region.

11	Tadesse AW et al. ⁽¹⁵⁾	BMC Health	Public	Generate evidence for decision-making regarding the aetiology of anaemia and the impact of interventions such as iron fortification on anaemia.	Children (6-59 months) and women of reproductive age (15-49 years) at high risk of anaemia.	Cross-sectional	Provides the most comprehensive etiological evaluation of anaemia in Ethiopia with analysis of diet, biomarkers, infections and other risk factors. The study supports the development of a high-impact anaemia control programme. Trial registration: ClinicalTrials.gov, NCT04002466.
12	Alamneh TS et al. ⁽¹⁶⁾	Sci Rep.		Identifying factors of anaemia severity in children aged 6-59 months using Bayesian ordinal analysis.	Children, women of childbearing age, and men from representative households in Ethiopia.	Cross-sectional	Prevalence of anaemia identified by risk factors with a Bayesian statistical approach. Provides deeper insight into anaemia control in vulnerable groups.
13	Lavoie A et al. ⁽¹⁷⁾	Can J Health	Public	Estimating the prevalence of iron deficiency (ID) and anaemia, and key protective factors in Nunavimmiut (16 years and older).	831 women and 436 men in Qanuilirpitaa.	Cross-sectional	ID prevalence was highest in women of childbearing age (33 %) and anaemia in those aged 50 years and above (31 %). The study highlights the importance of improving food access as a protective factor.
14	Aguree S et al. ⁽¹⁸⁾	Nutrients		Determined the prevalence of anaemia, ID, and IDA in women aged 20-49 years by BMI.	Data from NHANES 2001-2006.	Observational	Prevalence of ID, anaemia, and IDA is higher in obese women. The importance of methods to define iron deficiency in obese populations is highlighted.
15	Turawa et al. ⁽¹⁹⁾	Int J Environ Res Public Health		Summarises the prevalence of anaemia, iron deficiency and iron deficiency anaemia in South Africa.	Included the population of children under 5 years and women of reproductive age in South Africa.	Systematic	Of 713 articles, 14 met the inclusion criteria. Provides prevalence estimates based on WHO criteria, supporting anaemia policy development.
16	da Silva Lopes et al. ⁽²⁰⁾	Cochrane Database Syst Rev		Summarises evidence on the benefits or risks of nutritional interventions to prevent and control anaemia throughout the life cycle.	16 normal subjects and 15 IDA patients.	Systematic	Studies show a link between gut microbiota dysbiosis and IDA. This research underpins the development of microbiota-based strategies for IDA prevention.
17	Bertanir al. ⁽²¹⁾	Muara KESANS Int J Heal Sci		To determine the effectiveness of anaemia education through video and leaflet on adolescent girls.	145 female students of SMA Negeri 1 Muara Lawa.	Quasi-experimental	Education using videos and leaflets improved knowledge and attitude towards taking blood supplement tablets. There is a significant effect with a p value <0,05.

18	Chaudry ZA et al. ⁽²²⁾	Med Forum Mon	To determine the prevalence of anaemia and associated factors among women of reproductive age in Gujarat.	150 women aged 16-50 years.	Cross-sectional	The prevalence of anaemia among women of reproductive age was 56 %. Risk factors included unhealthy diet and low socioeconomic status. Severe anaemia was most common in the 30-43 years age group.
19	Jafari A et al. ⁽²³⁾	Iran J Public Health, 2021	Evaluating HL status in continuous school students	199,714 sample of secondary school students aged 6-18 years	Systematic review	The association of HL with health outcomes, health promotion behaviours, self-efficacy, self-harm behaviours, and self-care ability was statistically significant. HL was related to parental education, socioeconomic factors, age group, and digital media.
20	Felix M ⁽²⁴⁾	Am J Epidemiol, 2022	Measuring the effect of years of schooling on anaemia and nutritional status and cost-effectiveness of primary education as an anaemia intervention	Anaemia biomarker and BMI data from 13,984 suburban-aged women (Ethiopia)	Natural experiment	Each additional year of schooling reduces anaemia risk by 3 % and increases BMI by 0,26-0,42. Basic education is cost-effective with a cost per preventable case of anaemia of US\$1654.
21	Magfirah AN et al. ⁽²⁵⁾	J Public Health Dev, 2023	Comparing the effect of e-posters and LADIES on adolescent knowledge, dietary intake, and haemoglobin levels	49 adolescent girls aged 16-17 years, divided into intervention (n=25, LADIES) and control (n=24, e-poster) groups	Quasi-experiment, pretest-posttest with controls	LADIES media was more effective than e-posters in improving knowledge, nutrient intake, and haemoglobin levels. There were significant differences between groups in knowledge and iron intake (p<0,01).
22	Hernianti et al. ⁽²⁶⁾	J Public Health Dev, 2023	Comparing the effect of WhatsApp and Instagram on knowledge, attitude, and diet of adolescent girls	60 participants divided into two groups: intervention (n=30, Instagram) and control (n=30, WhatsApp)	Quasi-experiment, pretest-posttest with controls	Instagram was more effective than WhatsApp in improving knowledge (p=0,000), attitude (p=0,000), and diet (p=0,002).
23	Verma K et al. ⁽²⁷⁾	J Family Med Prim Care, 2022	To determine the prevalence of anaemia, associated factors, and knowledge about anaemia among adolescent girls in a remote area of Rajasthan.	625 adolescent girls aged 11-19 years from rural Rajasthan	Cross-sectional study	Anaemia was found in 56,32 % of the respondents. Significant risk factors included young age (11-14 years; AOR=3,63; p=0,042) and low socioeconomic status (AOR=4,37; p=0,022).

24	May Astuti NA et al. ⁽²⁸⁾	Placenta Health Science and Applications, 2022	Knowing the effect of nutrition education through posters and videos on anaemia knowledge in adolescent girls	40 adolescent girls aged 12-18 years, divided into poster and video groups	Quasi-experiment, pretest-posttest	Nutrition education through posters (p=0,021) and videos (p=0,001) improved anaemia knowledge. Video was more effective than poster.
25	Abdulrahman et al. ⁽²⁹⁾	Heliyon	examines how multimedia technology has proven to be an appropriate strategy for bridging the gap in providing unrestricted access to quality education and improving learner performance	Article	Systematic Review	Multimedia used for teaching and learning targets solutions towards the pedagogical content of the subject of interest and the audience of users of such solutions, while the success of different multimedia tools that have been used on various target groups and subjects can be attributed to the technology and components embedded in their development.
26	Asad et al. ⁽³⁰⁾	Journal of Applied Research in Higher Education	enabling students to acquire broader knowledge and access the Internet to improve learning efficiency	100 participants: 80 students and 20 teachers	Random sampling with Morgan's sample size table	Students' level of interest in the integration of ICT and e-learning in science and social science courses. Findings show that through ICT and e-learning materials, students can learn more effectively, which can also facilitate teachers in their teaching process in this modern technological era.
27	Hasanica et al. ⁽³¹⁾	Material medica socio-	provided data on the effectiveness of printed health education materials	120 students divided into examination and control groups	Quantitative, descriptive-analytical	Health education posters showed lower but persisting statistical significance in relation to knowledge gained and attitude change between surveys conducted at different times
28	Lehrl et al. ⁽³²⁾	Frontiers in Psychology	analysing the relationship between analogue and digital home learning environments (HLEs) in the homes of toddlers and preschoolers	4,914 children aged 0-5 years	Growing up in Germany II	Analogue and digital media activities in HLEs, children's social and academic competence

29	Heni Irawati et al. ⁽³³⁾	Indonesian Journal of Health Management	To determine the effect of booklet on reproductive health knowledge and attitudes of brides-to-be related to pregnancy risk prevention.	50 brides-to-be for intervention group, 50 for control group	Q u a s i experiment, non-equivalent control group design	There is a difference in post-intervention reproductive health knowledge and attitudes between the intervention group and the control group ($p=0,000<0,05$)
----	-------------------------------------	---	---	--	---	--

DISCUSSION

Iron deficiency anaemia remains a critical public health issue in Indonesia, particularly among brides-to-be and women of reproductive age. The findings from this review indicate that behaviour, culture, and local food utilisation play a pivotal role in shaping health literacy and determining the success of anaemia prevention efforts. Behavioural determinants strongly influence anaemia prevention. Studies in West Java and South Sumatra highlight that reproductive health counselling and iron supplementation can improve knowledge and compliance among brides-to-be. However, compliance with supplementation remains suboptimal despite free availability, largely due to limited awareness, misconceptions, and social stigma. This finding is consistent with previous evidence showing that behavioural change requires more than availability of supplements—it demands effective communication strategies that address myths and motivate sustained adherence.^(5,8)

Cultural influences emerged as both facilitators and barriers. On Taliabu Island, cultural traditions support the consumption of local iron-rich foods such as ganemo, fish cane, and seaweed, which contribute to meeting nutritional needs. Conversely, cultural taboos that restrict certain foods for women or discourage modern medical interventions act as barriers. This dual role of culture reinforces the need for culturally tailored interventions. Prior research has shown that health promotion materials designed in local languages and embedded with cultural symbols increase acceptance and comprehension among target populations.^(7,34) Local food resources represent an underutilised but highly sustainable strategy. Leafy greens, local meat, and seafood provide affordable and accessible sources of iron, folate, and other micronutrients essential for red blood cell production. Several studies demonstrated that when communities are educated on preparation and cooking methods that preserve nutrient content, local foods can significantly contribute to anaemia prevention. Thus, promoting local foods not only addresses nutritional deficiencies but also strengthens food sovereignty and long-term sustainability.

Educational media, especially leaflets and booklets, play a crucial role in bridging behaviour and culture. Evidence from East Metro and Taliabu Island demonstrates that culture-based educational tools—developed in local languages and reflecting community values—improve comprehension, acceptance, and adherence to healthy practices. These findings align with Miatius Zulaizah et al.⁽¹¹⁾, who showed that culturally relevant communication materials increase the effectiveness of public health interventions. Nonetheless, challenges remain. Accessibility is limited in remote areas due to inadequate infrastructure and poor internet connectivity, which restrict dissemination of information.⁽³⁵⁾ Moreover, low education levels in some communities reduce the effectiveness of written materials, underscoring the need for complementary strategies such as direct counselling, peer education, and community-based training.⁽³⁶⁾

Implications for practice and policy are clear. First, health promotion programmes should prioritise culturally adapted educational media to enhance relevance and acceptance. Second, integrating nutrition education with community empowerment initiatives can maximise the use of local foods and improve dietary practices. Third, collaboration between government, healthcare providers, educational institutions, and non-governmental organisations is essential to strengthen outreach and ensure equity in access to information. In conclusion, this review underscores that behaviour, culture, and local food utilisation are interlinked determinants of anaemia prevention. By embedding these elements into health literacy interventions, particularly through culturally tailored educational media such as leaflets, programmes can become more effective, sustainable, and acceptable to communities. This integrated approach contributes not only to reducing anaemia prevalence but also to advancing broader goals of nutrition security and women's health empowerment.

BIBLIOGRAPHIC REFERENCES

1. Mishra A, Marwah S, Divedi P, Dewan R, Ahluwalia H. A Cross-Sectional Study of Barriers in Prevention of Anemia in Pregnancy. *Cureus* 2021; <http://dx.doi.org/10.7759/cureus.12802>
2. Pusporini AD, Salmah AU, Wahyu A, Seweng A, Indarty A, Suriah, et al. Risk factors of anemia among pregnant women in community health center (Puskesmas) Singgani and Puskesmas Tipo Palu. *Gac Sanit.* 2021. <http://dx.doi.org/10.1016/j.gaceta.2021.10.010>
3. Rockey DC, Altayar O, Falck-Ytter Y, Kalmaz D. AGA Technical Review on Gastrointestinal Evaluation of Iron

- Deficiency Anemia. *Gastroenterology* 2020;159(3):1097-119. <http://dx.doi.org/10.1053/j.gastro.2020.06.045>
4. Balcha WF, Eteffa T, Arega Tesfu A, Abeje Alemayehu B. Maternal Knowledge of Anemia and Adherence to its Prevention Strategies: A Health Facility-Based Cross-Sectional Study Design. *Inq J Heal Care Organ Provision, Financ* 2023;60. <http://dx.doi.org/10.1177/00469580231167731>
 5. Khani Jeihooni A, Rakhshani T, Harsini PA, Layeghiasi M. Effect of educational program based on theory of planned behavior on promoting nutritional behaviors preventing Anemia in a sample of Iranian pregnant women. *BMC Public Health* 2021;21(1). <http://dx.doi.org/10.1186/s12889-021-12270-x>
 6. UNICEF. The State of the World's Children 2019: Children, Food and Nutrition--Growing Well in a Changing World. New York: 2019. <https://www.unicef.org/reports/state-of-worlds-children-2019>
 7. Loechl CU, Datta-Mitra A, Fenlason L, Green R, Hackl L, Itzkowitz L, et al. Approaches to Address the Anemia Challenge. *J Nutr* 2023;153:S42-59. <http://dx.doi.org/10.1016/j.tjnut.2023.07.017>
 8. Fierro-Suero S, Almagro BJ, Sáenz-López P. Validation of the achievement emotions questionnaire for physical education (AEQ-PE). *Int J Environ Res Public Health* 2020;17(12):4560.
 9. Rinnanik R, Buchori B, Yulianti VD, Bimantoro L, Thoyib T. Kursus Calon Pengantin: Upaya Meningkatkan Kesiapan Mental Pengetahuan Kesehatan dan Ekonomi Keluarga. *NEAR J Pengabdian Kpd Masy* 2021;1(1):68-74.
 10. Nurainun N, Yusuf AM. Analisis tingkat kesiapan menikah calon pengantin. *Edukatif J Ilmu Pendidikan* 2022;4(2):2110-5.
 11. Zulaizah FM, Pipitcahyani TI, Aini EN, Sholikah SM. PENGARUH PENDIDIKAN KESEHATAN TERHADAP PENINGKATAN PENGETAHUAN CALON PENGANTIN MENGENAI KESEHATAN PRANIKAH: THE INFLUENCE OF HEALTH EDUCATION ON INCREASING THE KNOWLEDGE OF PROSPECTIVE BRIDES ABOUT PRE-MARITAL HEALTH. *J Midwifery Sci Women's Heal* 2023;4(1):13-22.
 12. Astuti DT, Putri R, Lisca SM. Pengaruh penyuluhan, pemeriksaan kesehatan reproduksi, dan pemberian tablet tambah darah terhadap tingkat pengetahuan dan kesadaran kesehatan reproduksi bagi calon pengantin sebagai upaya pencegahan stunting di kecamatan cinere tahun 2022. *SENTRI J Ris Ilm* 2023;2(4):1163-73.
 13. Mastuti SR, Yolandia RA, Sugesti R. Hubungan Kebiasaan Makan, Konsumsi Suplemen Zat Besi, Dan Kek Dengan Anemia Pada Calon Pengantin Di Puskesmas Toboali Tahun 2023. *SENTRI J Ris Ilm* 2023;2(5):1442-50.
 14. Dahlia M, Putri R, Zakiah R. Hubungan Siklus Menstruasi, Asupan Makan, Dan Status Gizi Dengan Anemia Pada Calon Pengantin Di Puskesmas Toboali Tahun 2022. *SENTRI J Ris Ilm* 2023;2(4):1190-200.
 15. Tadesse AW, Hemler EC, Andersen C, Passarelli S, Worku A, Sudfeld CR, et al. Anemia prevalence and etiology among women, men, and children in Ethiopia: a study protocol for a national population-based survey. *BMC Public Health* 2019;19(1). <http://dx.doi.org/10.1186/s12889-019-7647-7>
 16. Alamneh TS, Melesse AW, Gelaye KA. Determinants of anemia severity levels among children aged 6-59 months in Ethiopia: Multilevel Bayesian statistical approach. *Sci Rep* 2023;13(1). <http://dx.doi.org/10.1038/s41598-022-20381-7>
 17. Lavoie A, Lemire M, Lévesque B, Ayotte P. Determinants of iron deficiency and anemia among Nunavimmiut: results from the Qanuillirpitaq? 2017 Nunavik Health Survey. *Can J Public Heal* 2023;115(S1):152-67. <http://dx.doi.org/10.17269/s41997-023-00775-4>
 18. Aguree S, Owora A, Hawkins M, Reddy MB. Iron Deficiency and Iron Deficiency Anemia in Women with and without Obesity: NHANES 2001-2006. *Nutrients* 2023;15(10):2272. <http://dx.doi.org/10.3390/nu15102272>
 19. Turawa E, Awotiwo O, Dhansay MA, Cois A, Labadarios D, Bradshaw D, et al. Prevalence of Anaemia, Iron Deficiency, and Iron Deficiency Anaemia in Women of Reproductive Age and Children under 5 Years of Age in South Africa (1997-2021): A Systematic Review. *Int J Environ Res Public Health* 2021;18(23):12799. <http://dx.doi.org/10.3390/ijerph182312799>

20. da Silva Lopes K, Yamaji N, Rahman MO, Suto M, Takemoto Y, Garcia-Casal MN, et al. Nutrition-specific interventions for preventing and controlling anaemia throughout the life cycle: an overview of systematic reviews. *Cochrane Database Syst Rev* 2021;2022(1). <http://dx.doi.org/10.1002/14651858.cd013092.pub2>
21. Ompusunggu B, Kalsum U, Andraini R. Effectiveness of Anemia Prevention Education with Video Media and Leaflets on Knowledge and Attitudes of Young Women in Consuming Blood-Added Tablets at Senior High School 1 Muara Lawa. *KESANS Int J Heal Sci* 2023;2(9):746-58. <http://dx.doi.org/10.54543/kesans.v2i9.194>
22. Chaudry ZA, Khan A, Moeen N. Prevalence of Anemia Among Women of Reproductive Age Presenting at Teaching Hospital Gujrat. In: *Medical Forum Monthly*. 2019.
23. JAFARI A, TAVAKOLY SANY SB, PEYMAN N. The Status of Health Literacy in Students Aged 6 to 18 Old Years: A Systematic Review Study. *Iran J Public Health* 2021. <http://dx.doi.org/10.18502/ijph.v50i3.5584>
24. Muchomba FM. Effect of Schooling on Anemia and Nutritional Status Among Women: A Natural Experiment in Ethiopia. *Am J Epidemiol* 2022;191(10):1722-31. <http://dx.doi.org/10.1093/aje/kwac111>
25. Magfirah AN, - C, Indriasari R, Syam A, Salmah AU, A Taslim N. Effectiveness of android-based educational media on knowledge, dietary intake and hemoglobin levels for prevention of anemia in adolescent females. *J Public Heal Dev* 2023;21(2):212-22. <http://dx.doi.org/10.55131/jphd/2023/210218>
26. Hernianti, Citrakesumasari, Nurhaedar Jafar, Rahayu Indriasari, Andi Zulkifli, Hasnawati Amqam. Education using instagram on knowledge, attitudes and eating habits as prevention of anemia in adolescent girls in Makassar: 10.55131/jphd/2023/210207. *J Public Heal Dev* 2023;21(2 SE-Original Articles):82-90. <https://he01.tci-thaijo.org/index.php/AIHD-MU/article/view/262840>
27. Verma K, Baniya GC. Prevalence, knowledge, and related factor of anemia among school-going adolescent girls in a remote area of western Rajasthan. *J Fam Med Prim Care* 2022;11(4):1474-81. http://dx.doi.org/10.4103/jfmpc.jfmpc_1372_21
28. May Astuti NA, Kurniasari R. THE EFFECT OF NUTRITIONAL EDUCATION THROUGH POSTER MEDIA AND VIDEO ON THE IMPROVEMENT OF KNOWLEDGE ABOUT ANEMIA IN ADOLESCENT PRINCESS. *PLACENTUM J Ilm Kesehat dan Apl* 2022;10(2):112. <http://dx.doi.org/10.20961/placentum.v10i2.56226>
29. Abdulrahman MD, Faruk N, Oloyede AA, Surajudeen-Bakinde NT, Olawoyin LA, Mejabi O V, et al. Multimedia tools in the teaching and learning processes: A systematic review. *Heliyon* 2020;6(11):e05312. <http://dx.doi.org/10.1016/j.heliyon.2020.e05312>
30. Asad MM, Hussain N, Wadho M, Khand ZH, Churi PP. Integration of e-learning technologies for interactive teaching and learning process: an empirical study on higher education institutes of Pakistan. *J Appl Res High Educ* 2020;13(3):649-63. <http://dx.doi.org/10.1108/jarhe-04-2020-0103>
31. Hasanica N, Catak A, Mujezinovic A, Begagic S, Galijasevic K, Oruc M. The Effectiveness of Leaflets and Posters as a Health Education Method. *Mater Socio Medica* 2020;32(2):135. <http://dx.doi.org/10.5455/msm.2020.32.135-139>
32. Lehl S, Linberg A, Niklas F, Kuger S. The Home Learning Environment in the Digital Age—Associations Between Self-Reported “Analog” and “Digital” Home Learning Environment and Children’s Socio-Emotional and Academic Outcomes. *Front Psychol* 2021;12. <http://dx.doi.org/10.3389/fpsyg.2021.592513>
33. Irawati H, Kartini A, Nugraheni SA. Pengaruh booklet terhadap pengetahuan dan sikap kesehatan reproduksi calon pengantin terkait pencegahan risiko kehamilan di Kabupaten Pematang. *J Manaj Kesehat Indones* 2019;7(2):124-31.
34. Austin. Introduction: Growing well in a changing world. *State World’s Child*.2019;14-33. Available from: <http://dx.doi.org/10.18356/22661d90-en>
35. Hajat A, MacLehose RF, Rosofsky A, Walker KD, Clougherty JE. Confounding by socioeconomic status in epidemiological studies of air pollution and health: challenges and opportunities. *Environ Health Perspect*

2021;129(6):65001.

36. Pawlak K, Kołodziejczak M. The role of agriculture in ensuring food security in developing countries: Considerations in the context of the problem of sustainable food production. Sustainability 2020;12(13):5488.

FINANCING

No financing.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Dianita Widya Gandhi, Citrakesumasari.

Data curation: Dianita Widya Gandhi, Indra Fajarwati Ibnu.

Formal analysis: Dianita Widya Gandhi, Hasnawati Amqam.

Research: Dianita Widya Gandhi, Citrakesumasari, Indra Fajarwati Ibnu.

Methodology: Dianita Widya Gandhi, Citrakesumasari, Sudirman Nasir.

Project management: Dianita Widya Gandhi.

Resources: Citrakesumasari, Sitti Bulkis.

Software: Hasnawati Amqam.

Supervision: Citrakesumasari, Sudirman Nasir.

Validation: Indra Fajarwati Ibnu, Hasnawati Amqam.

Display: Sitti Bulkis.

Drafting - original draft: Dianita Widya Gandhi.

Writing - proofreading and editing: Citrakesumasari, Sudirman Nasir.