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Conflicts of interest are harming maternal and child health: time for scientific journals to end relationships with manufacturers of breast-milk substitutes

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Summary box

- Forty years after the World Health Assembly adopted the International Code of Marketing of Breast-milk Substitutes, inappropriate marketing of breast-milk substitutes persists and puts infants and young children at risk of malnutrition, illness and death.
- The formula industry is large and powerful and has used various 'medical marketing' strategies to influence scientists and health professionals as to the purported benefit of breast-milk substitutes.
- The examples provided in this commentary show how a manufacturer is using a leading scientific journal to market breast-milk substitutes through paid advertisements and advertisement features.
- By receiving funding from breast-milk substitute manufacturers, journals create a conflict of interest, whereby the publisher and readers of the journal may favour corporations consciously or unconsciously in ways that undermine scientific integrity, editorial independence and clinical judgement.
- Conflicts of interest have previously been identified in infant and young child nutrition science and in journal advertising policies and have been criticised by public health experts, yet the practice continues.
- All scientific journals and publishers should stop accepting funding from manufacturers and distributors of breast-milk substitutes, in accordance with global public health guidance. Public health must come before profit.

The promotion and support of breastfeeding globally is thwarted by the USD $57 billion (and growing) formula industry that engages in overt and covert advertising and promotion as well as extensive political activity to foster policy environments conducive to market growth.[1] This includes health professional financing and engagement through courses, e-learning platforms, sponsorship of conferences and health professional associations[2] and advertising in medical/health journals. These contribute to the overuse of specialised formulas[3] and inappropriate dissemination of health and nutrition claims.[4] Such 'medical marketing' reduces breastfeeding initiation, exclusivity, and duration, irrespective of country context.[5] It also creates a subtle, unconscious bias and conflict of interest, whereby journal publishers may consciously, or unconsciously, favour corporations in ways that undermine scientific integrity and editorial independence—even perceived conflicts of interest may tarnish the reputation of scientists, organisations or corporations. Such conflicts have plagued infant and young child nutrition science for decades.[6] Consequently, the World Health Organization (WHO) and United Nations Office of the High Commissioner for Human Rights recommend measures to avoid conflict of interest in nutrition policy development and service delivery as well as professional education and research.[7 8] While perceived conflict of interest generally does not involve financial payment, the WHO defined actual conflict of interest as arising "when a vested interest has the potential to unduly influence official or agency judgement/action through the monetary or material benefits it confers on the official or agency."[9]

The public health importance of breastfeeding is undisputed. Creating an

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Figure 1 An open-access advertisement published on the Nature website. https://www.nature.com/articles/d42473-018-00007-1

environment that supports and protects breastfeeding is essential to ensuring every child's right to the highest attainable standard of health. Companies that advertise amd promote their breast-milk substitutes in ways that contravene the International Code of Marketing of Breast-milk Substitutes (the Code),[10] violate the rights of children to be fed in the best possible way, and of mothers to make informed decisions about infant feeding.[7] There is something amiss with global health when academic journals advertise and have sponsorship policies that directly conflict with public health guidance. We are aware of one study on infant formula advertising in medical journals and although it reported that breast-milk substitute advertising in journals was uncommon, adverts identified were poorly compliant with the Code.[11 12] We use two examples to illustrate journal adverts that violate the Code: in May 2018, *Nature,* a high-impact factor and widely read publisher with numerous subspecialty journals, published an open-access advertisement about formula milk, with the subtitle '*Mother's milk is a rich source of many ingredients…Formula milk is unlikely to ever be a perfect substitute - but with the addition of human milk oligosaccharides, it has just got closer'*. (figure 1). Implying that formula is close to mother's milk could influence health professionals' perceptions and infant feeding counselling. Furthermore, because these sugars are sythesised in the laboratory, the claim that these are 'human milk oligosaccharides' is itself misleading and possibly contrary to consumer protection and food laws in many countries where misleading or deceptive claims are prohibited. Such advertising is contrary to provisions of the Code, national laws in at least 89 countries and arguably European Union law (where *Nature* is published).[13 14] For instance, Article 7.2 of the Code states that "Information provided by manufacturers and distributors to health professionals regarding products within the scope of this Code should be restricted to scientific and factual matters, and such information should not imply or create a belief that bottle-feeding is equivalent or superior to breastfeeding." Article 10 of the EU Regulation 609 of 2013 also states that "1. The labelling, presentation and advertising of infant formula and follow-on formula shall be designed so as not to discourage breastfeeding. 2. The labelling, presentation and advertising of infant formula, and the labelling of follow-on formula shall not include pictures of infants, or other pictures or text which may idealise the use of such formulae."[15] Likewise, subsection 21(3) of *The Infant Formula and Follow-on Formula (England) Regulations 2007* states if advertised in a scientific publication, "Information in advertisements for infant formula shall not imply or create a belief that bottle-feeding is equivalent or superior to breastfeeding."[16] The use of the terms "it has just got closer" in the advert clearly implies equivalency between breastfeeding and formula milk or, at best, meaningful proximity to infant formula and, as such, are contrary to the Code, and binding EU and UK law. Furthermore, the advertisement does not contain any of the information required by Article 4.2 of the Code, including, for example, the health hazards of unnecessary or improper use of infant formula and other breast-milk substitutes.

The second example of BMS advertising in a scientific journal that we highlight is the recent public and sponsored *Nature Research Custom Media* Facebook post, which referred to an advertisementfeature (figure 2) titled '*Examining breastmilk for clues in the fight against food allergies'* with the subtitle '*Research examining the roles of human milk oligosaccharides in infant immunity suggests that these breastmilk components may help suppress allergic responses and boost gut health'* (figure 2). The title of the advert is misleading as it suggests that the article is about breast-milk yet the focus is on synthetic oligosaccharides. The

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Figure 2 An advertisement feature published on the Nature website produced by Nature Research Custom Media. https://www.nature.com/articles/d42473-020-00362-y

advert implies that a commercial preparation can mimic and substitute the proven, complex, and dynamic natural food matrix that is human breastmilk which is conjecture that is not supported by the best available evidence.[17] Furthermore, the information provided in the advert is also an illegal claim in many of the jurisdictions where *Nature* is read. Both advertorials depicted here include photographs of young children, a clear violation of EU law and the Code.

These 'advertisement features' combine editorial style presentation with advertising content and serve to normalise formula milk for health professionals who are opinion leaders in communities and health systems. Fine-print stating that the advertiser is responsible for the content is obscured by large print headlines, sentimental pictures and imperious proclamations about scientific findings. Scientific journals carry authority and credibility among health professionals because they are presumed to report carefully considered, rigorous, peer-reviewed independent scientific analyses. The use of the term 'article' in the URLs for both advertisements and the inclusion of numerous formal scientific citations in a peer-reviewed journal also bolster the appearance that these advertisements won publication in a prestigious journal through scientific rigour, not the payment of a large fee. The examples cited risk jeopardising both infant health and the integrity of the scientific publishers. The Facebook post further promotes the 'Abbott Nutrition Health Institute' website enticing readers to use this source to obtain additional information that is solely commercial in nature.

Risks of promoting breast-milk substitutes are especially consequential in low-and middle-income countries where access to healthcare is poor, and malnutrition in all forms is prevalent. Feeding with breast-milk substitues is not affordable nor sustainable for most low-and middle-income countries' populations and results in increased infant morbidity and mortality. Given these vulnerabilities, scientific journals have a professional and ethical responsibility to put additional protections in place to ensure that their brands are not associated with misleading advertising claims and to warn readers of the high risks associated with suboptimal breastfeeding.[18]

An initial email submitted to Nature raising our concern received a reply that this would be considered by the editorial team; however, after numerous exchanges and nearly a year later, the advertisements remain on the site. These advertisements, the companies that place them and the journals taking their money exhibit a complete disregard for global consensus on avoiding conflicts of interest in global health in the marketing of breast-milk substitutes and contribute significantly to undermining support for breastfeeding among health and scientific opinion leaders which, by extension, undermines breastfeeding in the general population.

Scientific publications that rely on advertising revenue should have advertising, paid supplements and sponsorship policies aligned with global and regional public health guidance, and sound conflict of interest safeguards. Leading professional associations have made changes to their sponsorship policies in recent years. In 2014, the International Society for Social Pediatrics & Child Health published a position statement calling for the ending of all sponsorship from manufacturers of commercial formula products to paediatric associations.[19] In 2019, the Royal College of Paediatrics and Child Health stated that it would no longer accept funding from formula milk companies.[20] In 2019, the *British Medical Journal* and its affiliated publications committed to no longer receive funding from breast-milk substitute manufacturers.[21] Lake *et al* (2019) made a call to South African health and nutrition journals to follow suit.[22]

Although some journals may need to generate income through advertising, we urge editors to establish transparent policies stipulating what classes of adverts are allowed, guided by medical and public health consequences and national and international policies. Here we raise the example of infant formula, but the issue applies to other harmful commercial influences on health including tobacco, unhealthy foods, and alcohol. Similar issues regarding advertising of drugs by pharmaceutical

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companies in medical journals were raised in recent years.[23]

We urge all scientific journals and publishers to refrain from accepting funding from manufacturers and distributors of breast-milk substitutes or commercial formula products, in accordance with the Code. Journals and publishers must prioritise public health over profit; otherwise, they will amplify the estimated loss of 823 000 children's lives each year due to sub-optimal breastfeeding.[24]

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