



Perspectives from South African dietitians on infant and young child feeding regulations

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Abstract

Objective: This study aimed to determine the knowledge, perceptions and practices of dietitians in South Africa regarding the Regulations Relating to Foodstuffs for Infants and Young Children (R991).

Design: A mixed methods, cross-sectional design was used.

Setting: Quantitative data were collected using an online survey (n 282) and qualitative data by means of two focus group discussions (n 12).

Participants: Participants were dietitians registered with the Health Professions Council of South Africa.

Results: Dietitians' average knowledge score was $64.8\% \pm 12.5$. Those working in infant and young child feeding had a 5% higher knowledge score (95% CI 1.4, 8.6, $P = 0.01$). Perceptions towards the Regulations were generally positive, and the majority of practices were compliant. Positive perceptions seemed to correlate with compliant practices. The most frequently selected enabler to the implementation of the Regulations was 'Increase in other initiatives which support, protect and promote breastfeeding', and the most frequently selected barrier was 'Lack of awareness of the Regulation among health care providers'. The major themes from the focus group discussions comprised: less knowledge among dietitians and mothers about products controlled under the Regulations, non-compliance of other health care providers, the dietitians' role in support and enforcement, the discrepancy between practice in private and public sectors and a lack of enforcement.

Conclusions: South Africa has taken a bold step in legislating the International Code of Marketing of Breast-milk Substitutes and should upscale programmes to ensure consistent monitoring and enforcing of the Regulations.

Keywords

Infant and young child feeding
Regulations
Dietitians
Marketing

Breast-feeding has received much attention in recent decades as a vital practice to support and achieve better health outcomes in infants and young children^(1–5). Despite this, it was noted at the 27th World Health Assembly in 1974 that there had been a decline in the rates of exclusive breast-feeding in many regions of the world. It was recognised that one of the reasons for the decrease in breast-feeding was due to inappropriate practices of advertising breast-milk substitutes (BMS), and the International Code of Marketing of Breast-milk Substitutes (WHO Code) was drawn up in 1981 to control the marketing of these products⁽⁵⁾. South Africa passed legislation on the WHO Code in response to the call for action to scale up programmes to support and promote breast-feeding. On 6 December 2012, the Department of Health (DoH) published the

Regulations Relating to Foodstuffs for Infants and Young Children⁽⁶⁾ (R991 Regulations) under the Foodstuffs Cosmetics and Disinfectants Act of 1972⁽⁷⁾. The Regulations placed restrictions on the marketing and advertising of BMS and foodstuffs intended for young children⁽⁶⁾.

The R991 Regulations apply to *designated products*, defined as 'infant (<12 months) formula, follow-up formula, infant or follow-up formula for special dietary management for infants and young children (0–36 months) with specific medical conditions; complementary foods; liquid milks, powdered milks, modified powdered milks, or powdered drinks marketed or otherwise represented as suitable for infants and young children; feeding bottles, teats and feeding cups with spouts, straws or teats; any other products marketed or otherwise represented as

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suitable for infants and young children⁽⁶⁾. The regulations are intended for different target groups (the general public, manufacturers and retailers, mothers/caregivers, health care personnel and health care establishments) and cover the following five key areas: (1) Labelling, composition, packaging and manufacturing matters; (2) Promotion of formulas, complementary foods and related products to the general public and mothers; (3) Promotion of formulas, complementary foods and related products to health care personnel and health care establishments; (4) Financial contributions or sponsorship to health care personnel working in infant and young child nutrition; (5) Information and educational material on infant feeding⁽⁶⁾.

According to R991, 'any person, group, body or institution may submit a written complaint supported by adequate evidence to the Director-General.' Potential or real violations with evidence can also be reported to the Provincial DoH, Nutrition Programme. The responsible person at the Provincial office will forward the potential or real violation to the National DoH, Nutrition Directorate, for investigation and guidance. (Personal correspondence) R991 further states on enforcement: 'Inspectors appointed by the Director General in terms of Section 10 of the Act are responsible for the enforcement of these regulations. Legal actions may be instituted against manufacturers, suppliers or importers who violate the regulations as stipulated by the Act. Any person who contravenes the Regulations is guilty of an offence and liable to penalties as prescribed by the Foodstuffs, Cosmetics and Disinfectants Act of 1972⁽⁶⁾. However, an amendment to the R991 Regulations passed in July 2015 deleted the section of the Regulations pertaining to enforcement⁽⁸⁾. More recently, in November 2019, the National DoH launched a dedicated email for reporting violations of the Regulations (personal correspondence).

This study aimed to determine South African dietitians' perspectives on the Regulations with a view to clarify how the Regulations are being accepted and implemented in the country and to identify areas that need strengthening. Health care provider/(s) (HCP) play an essential role in the bridge between policy and practice⁽⁹⁾, and their co-operation can determine how effective policy implementation is^(2,9,10). Gillespie *et al.* identify knowledge and evidence as a key dimension of an enabling environment, for example, for policy implementation, and refer to nutrition champions who are 'key individuals—leaders, champions, catalysts, and policy entrepreneurs—in the development of beneficial policy changes' and those who have extensive knowledge and experience in nutrition⁽¹¹⁾. Knowledge is a pivotal factor in affecting change, which can positively impact policy implementation. The authors also state that scientific research is needed to document contextual factors that affect implementation of nutrition policies⁽¹¹⁾. Valaitis *et al.* investigated factors that influence successful policy

implementation in public health, and they found that healthcare staff with the right skills can help to facilitate implementation at the organisational level. Diffusion and dissemination were identified as another important component, which is an aspect that dietitians would assist with when it comes to the Regulations⁽¹²⁾. Greenhalgh *et al.* illustrated that if participants understand the consequences of an intervention, then they will be more likely to adopt it⁽¹³⁾, which speaks to the relevance of determining dietitians' knowledge level on the Regulations. While there are many studies investigating HCP attitudes, perceptions, knowledge and challenges related to infant feeding and their influence on infant feeding practices^(2,10), none appears to address the Regulations in particular. There is a lack of available research investigating the impact of the Regulations to restrict the marketing of infant and young child feeding products⁽¹⁴⁾, which this study aims to attenuate.

South African dietitians were chosen as the group of HCP for this study since they could offer a unique perspective on the topic, as many of them perform work with mothers, infants and caregivers; precisely, the groups the Regulations aim to protect. Dietitians have wide-ranging knowledge about the foods commonly used by patients or clients as well as the practical, therapeutic, financial and preferential factors involved in obtaining and preparing food⁽¹⁵⁾. In addition, dietitians were chosen to establish a useful baseline survey as no other studies to date have investigated the opinions of HCP on the Regulations. Dietitians' knowledge, perceptions and practices (including barriers and enablers) around the Regulations were explored and are described here.

Methods

Study type and population

A mixed methods, cross-sectional design was used. Quantitative data were collected by means of an online self-administered survey. Qualitative data were collected by means of focus group discussions. The sampling frame consisted of all dietitians within South Africa registered with the Health Professions Council of South Africa (*n* 4452). The main aim of the research was to determine the knowledge, perceptions, behaviours and practices of dietitians in South Africa regarding The Regulations Relating to Foodstuffs for Infants and Young Children (R991) (The Regulations). Refer to Table 1 for the main objectives of the study.

The secondary objectives were to determine the differences in level of knowledge according to various sub-groups and to investigate associations between knowledge, perceptions, behaviours and practices. A study by Borggreve and Timen found that barriers were related to knowledge and attitudes in the implementation of a policy guideline in the Netherlands⁽¹⁶⁾. Byham-Gray *et al.* found

Table 1 Main study aims and objectives to assess South African dietitians' perspectives on the Regulations legislating the International Code of Marketing of Breast-milk Substitutes

Main aims	Knowledge	Perceptions	Practices	Barriers	Enablers
<p>Main objectives</p> <p>To assess knowledge and understanding of the regulations in terms of:</p> <ul style="list-style-type: none"> –Products covered under the Regulations –General labelling requirements of designated products –Required nutritional information on labels –Promotional material directed at HCP 	<p>To assess perceptions of dietitians on the Regulations in terms of:</p> <ul style="list-style-type: none"> –Acceptance –Importance –Relevance –Practicality –Responsibilities of HCP 	<p>To determine behaviours and practices of dietitians in relation to the Regulations in terms of:</p> <ul style="list-style-type: none"> –Implementation and use in the workplace –Educating clients on labels –Relationship with company reps –Responses to violations of the Regulations 	<p>To determine the barriers faced by dietitians relating to challenges experienced with the Regulations; such as:</p> <ul style="list-style-type: none"> –Violations –Lodging complaints –Enforcement –Support –Promotion-related matters (such as, research grants, financial contributions, sponsorship and restrictions placed on product reps) 	<p>To determine the enablers experienced by dietitians relating to:</p> <ul style="list-style-type: none"> –Communication from the DoH –Support –Co-operation from product manufacturers and reps –Positive outcomes experienced 	

HCP, Health care provider/(s); Reps, representatives; DoH, Department of Health.

in their study of predictors of research involvement among registered dietitians that there was a linear relationship between research score (based on practice in research), perceptions, attitudes and knowledge of evidence-based practice score⁽¹⁷⁾. Thus, it is plausible that these factors may be associated with one another, and it was decided to carry out sub-group comparisons for this study to determine where interventions can take place or where attention is needed. Refer to Fig. 1 for a conceptual framework of the study outcomes adapted from that of Cochrane *et al.*⁽¹⁸⁾.

Selection of sample and sample size

A combination of opportunistic and snowball sampling was used for the online survey component. Participants were recruited through various channels, including the Association for Dietetics in South Africa, the Board of Healthcare Funders, the DoH in South Africa and social media. Participants were asked to assist with recruiting further participants at the end of the survey. A sample size of 341 participants was calculated based on the total number of registered dietitians in South Africa and to estimate a proportion of 60 % of participants who were expected to be knowledgeable⁽¹⁹⁾ about the Regulations, assuming 5 % precision and 95 % level of significance. However, a sample size of only 282 participants was realised due to a poor response rate, and this resulted in a 5.7 % precision and 95 % level of significance.

Sampling for the focus group discussions was done purposively and consisted of registered dietitians working within KwaZulu-Natal. The area of KwaZulu-Natal was selected for convenience purposes. Two focus group discussions were conducted with a total of twelve dietitians. One focus group was conducted with dietitians working in the public sector and the other with dietitians working in the private sector. This method was used to ensure that dietitians from all spheres were included. At the time of the study, there were a total of 4452 registered dietitians in South Africa, of those 1189 (26.7 %) were dietitians registered to work in the private sector. It can be assumed that the remaining 3263 (73.3 %) were working in the public sector, non-practising, retired, or working elsewhere in the private sector but not in private practice. The aim of the focus groups was to add an additional element to the research rather than to achieve data saturation; thus, it was decided that two groups would be sufficient. All registered dietitians working in KwaZulu-Natal who responded to the invitation and gave their consent to participate and to have the focus group discussion audio recorded were included.

Data collection

Procedure

A link to the self-administered electronic survey was sent out through the various networks between March and

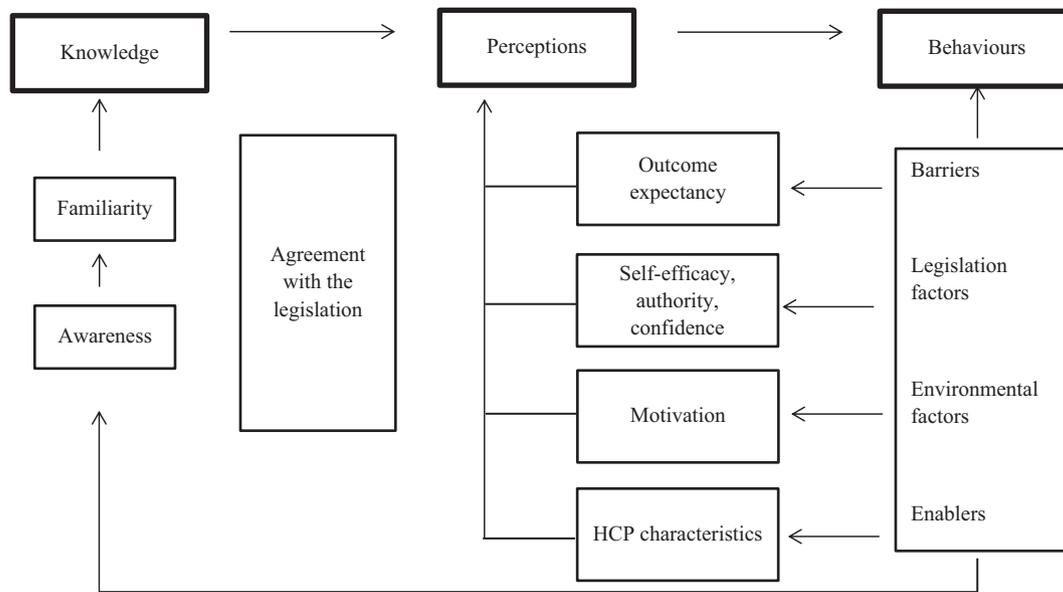


Fig. 1 Conceptual framework of study outcomes to assess South African dietitians’ perspectives on the Regulations legislating the International Code of Marketing of Breast-milk substitutes using an online survey and focus group discussions. HCP, Health care provider(s). Adapted from Cochrane *et al.*'s conceptual framework on Barriers to Physician Adherence to Practice Guidelines in Behavior Change⁽¹⁸⁾

July 2017. The invitation to participate in the survey included a cover letter with general information about the study and an informed consent declaration. It was compulsory to indicate agreement to informed consent prior to completing the survey. A lucky draw prize was used as an incentive. The time taken to complete the survey was kept to approximately 15 to 20 min. Reminders to complete the survey were sent out twice after the initial communication.

Focus group discussions were conducted during December 2016 and June 2017 in KwaZulu-Natal. The focus group discussions were conducted in private venues booked for the purpose of the discussion. The principal investigator facilitated the discussions, and an observer was present to record handwritten observations. The anonymity of participants was protected by assigning codes to each participant. All participants signed a consent form prior to participating in the discussion, which was explained to the participants by the facilitator and included giving consent to have the discussion recorded via an audio recorder. Each participant was given a gift voucher as compensation for their time and travel expenses.

Data collection tools

The survey was structured into six sections and developed using the SurveyMonkey® online survey software. The survey questions were developed based on the objectives of the study and the content of the legislation by the research team with assistance from experts in the field. The survey consisted of approximately seventy-five questions with six sections: (1) demographic information, (2) knowledge, (3) perceptions, (4) practices, (5) barriers and (6) enablers

(to the implementation of the Regulations). Please refer to Table 1 for clarification on what was measured under each variable of interest. Pre-set responses (multiple choice and true or false) and Likert scales were used, and open-ended questions were included. Content validity of the survey was assessed by five experts in the fields of infant and young child nutrition, nutrition policy, legislation and labelling. All input and comments received were discussed with the co-authors, and adaptations were made accordingly. These experts also examined relevance of survey questions, potentially biased questions and offered additional suggestions to include components the researcher may have overlooked. A pilot study was conducted prior to data collection to assess face validity and refine the survey. A previously validated tool could not be used as the survey was developed anew based specifically on the content of the legislation.

Each question under the knowledge section of the survey had correct and incorrect answers; it was decided to score the knowledge section to quantitatively summarise the data in a useful way for the reader and as knowledge is a clear cut issue of right or wrong, whereas the other variables are more subjective. Examples from the literature support the use of knowledge scores^(17,20). In light of the literature cited earlier by Gillespie *et al.*, knowledge is a vital component of an enabling environment and was used in this study as a starting point. Knowledge scores were determined by calculating average percentages for each of the twenty questions and for each participant. Under the enablers and barriers sections of the survey, participants were given a suggested list and asked to choose the most relevant ones.



For the focus group discussion component, a discussion guide was developed before commencement of the study to direct the discussion and probe responses. The discussion guide was developed using examples from the literature^(21,22) and based on the study objectives. The focus group discussion focused mainly on perceptions, behaviours and practices, as these objectives were better achieved with qualitative methods. The guide was refined based on survey responses to explore additional factors related to the objectives. A pilot study was conducted on a purposive sample of five participants to test the procedure. Data obtained from the pilot focus group were used in the main study because it offered different insights, the discussion guide was kept much the same after the pilot and there was a poor response rate to participate in discussions. Participants were made aware of this possibility at the time.

Data capturing and analysis

Quantitative data

Data from the survey were captured using Microsoft Excel®. The SurveyMonkey® package included a function of converting the data into Microsoft Excel® format.

The Stata version 14 software package was used for statistical analysis. The knowledge scores obtained had a bounded distribution with a fixed minimum and maximum value. Due to this, the scores had non-normal distributions and median knowledge scores were used. Continuous variables were summarised using means or medians and associated variability (SD or range). Categorical data were analysed using the Pearson's χ^2 test and logistic regression methods. Quantile regression was used to compare median knowledge scores across demographic, perception and practice variables. The perceptions and practices were analysed as categorical variables with the lowest category used as the reference. For each variable, very small categories were joined with the closest category to ensure that the frequencies were acceptable for the statistical model and estimates were viable. Calculations were done to determine 95% CI and *P* values. Spearman correlation coefficients between knowledge score, perceptions and practice variables were calculated and tested, and 95% CI and *P* values were calculated. To compare perception variables with practice variables and the former two variables with barriers and enablers, Pearson's χ^2 test was used and *P* values were calculated. All Likert scale type questions had a 'Not Applicable' option; a response of 'Not Applicable' was set to 'missing'. Missing values were assumed missing as random, and no adjustments or imputation was done. As the sampling for the survey participants was opportunistic and convenient, one would expect the bias due to missing values in the participants to be minimal in comparison with the representative bias due to the convenience sample. The main survey questions (sixty-six questions) were made compulsory to

answer. Certain questions were applicable to certain groups only, that is, product representatives (six questions) and dietitians visited by product representatives (seven questions). Missing values would be excluded for those questions and totals adjusted. Optional, open-ended questions were kept to a minimum (five questions). A *P* value of <0.05 was considered statistically significant.

Qualitative data

The first author transcribed all the information gathered from the audio recordings and handwritten observations into Microsoft Word®. After transcription of the recordings, the data were manually and systematically examined, the scripts were read multiple times to become familiar with the content and meaningful quotes that related to the study objectives were noted. The transcriptions were then open-coded, based on the meaningful quotes identified, and themes were developed to group similar quotes or ideas. The frequency that each particular theme arose was determined and the most prominent themes were reported. The themes were summarised into cohesive descriptions in a way that addressed the objectives of the study. The data were not verified by a second person, but the co-authors were familiar with the data from all the phases of the research and assisted with the interpretation of the codes. In relation to Guba's model⁽²³⁾ for determining rigour of qualitative research, it can be said that this study attended to the truth value of results through the use of direct verbatim quotations to substantiate conclusions, to neutrality by studying the literature on facilitator techniques prior to focus group data collection and credibility by discussing the research process and findings with co-authors who have experience in qualitative methods⁽²⁴⁾. Transferability was improved by using purposive sampling⁽²⁵⁾.

Results

Demographic characteristics

A total of 282 complete survey responses were collected. Demographic information collected from survey participants is summarised in Table 2.

The focus group discussions comprised eleven females and one male; all participants were living and working in KwaZulu-Natal. One group consisted of five private sector dietitians; four working in private practice and one employed as a product representative. The other focus group consisted of seven dietitians all employed in the public sector. The focus group discussions consisted of a mixture of ethnic groups; inclusive of Caucasian, African and Indian groups.

Knowledge

The average knowledge score (number of correct answers) of all the participants was 13/20 (64.8 (SD 12.5) %). Figure 2 provides the main topic of each question in the knowledge

Table 2 Demographic profile of survey participants (*n* 282) from the survey on perspectives of South African dietitians on the Regulations relating to Foodstuffs for Infants and Young Children completed by registered dietitians recruited through opportunistic and snowball sampling in South Africa, March–July 2017

Variable	Total group	
	<i>n</i>	%
Age (years)* one missing value		
Mean	33.0	
SD	7.95	
20–24	20	7.1
25–29	102	36.2
30–39	110	39
≥40	49	17.4
Gender		
Male	17	6
Female	265	94
Years of experience		
Mean	8.9	
SD	7.2	
Working with IYCF		
Yes	189	67
No	93	32.9
Years working in IYCF		
Mean	6.4	
SD	5.6	
Aware of the Regulations		
Yes	270	95.7
No	12	4.3
Read the Regulations		
Yes	218	77.3
No	64	22.7
Visited by product rep(s)		
Yes	204	72.3
No	78	27.7
Employed as product rep		
Yes	7	2.5
No	275	97.5
Residential province		
Eastern Cape	16	5.7
Free state	13	4.6
Gauteng	82	29.1
KwaZulu-Natal	51	18.1
Limpopo	17	6.0
Mpumalanga	15	5.3
Northern Cape	25	8.9
North West	9	3.2
Western Cape	54	19.1
Category of practice*		
Public service	149	52.8
Private practice	106	37.6
Corporate	21	7.4
Training institution	15	5.3
Other	15	5.3
Food industry	13	4.6
Research	11	3.9
NGO	10	3.5
FSM	7	2.5
Education	5	1.8
Academia	5	1.8
CSO	2	0.7

IYCF, infant and young child feeding; Reps, representatives; NGO, non-governmental organisation; FSM, food service management; CSO, civil society organisation.

*Category of practice percentages does not add up to 100 % as participants could select more than one category.

section of the survey and the percentage correct answers for each question. It appeared that the older age groups had higher knowledge, but this effect was not significant overall ($F_{3,277} = 0.52$, $P = 0.67$). Based on scatter plots, less

experienced dietitians seemingly had less knowledge, although this effect was only evident for the first 5 years of practice and was not confirmed with median regression analysis. Participants who worked with infant and young child feeding compared with those who did not had a 5 % higher median knowledge score (95 % CI 1.4, 8.6, $P = 0.01$).

The focus group participants felt that they had less knowledge about products controlled under the Regulations and were dissatisfied that the Regulations had inadvertently led to them receiving less product information from the representatives. Refer to Table 3 for the main themes and quotes from the focus group discussions.

Perceptions

Overall, survey participants seemed to have supportive perceptions towards the Regulations: 61 % strongly agreed that the Regulations are a positive step forward for South Africa and 64.9 % strongly agreed that they support the reasons behind the passing of the Regulations. It came across that participants supported the Regulation's aim and believed they were relevant: 44 % agreed that the Regulations will decrease the inappropriate use of designated products by caregivers and 59.9 % strongly agreed that the Regulations are relevant in the everyday work of HCP working in infant and young child nutrition. According to the survey participants, product representatives were mostly supportive and compliant with the Regulations: 61.3 % strongly disagreed or disagreed that Product representatives are still promoting designated products and 71.4 % of product representatives strongly agreed that they support the Regulations. Participants felt that the Regulations were important for HCP and companies to be aware of and accepted some responsibility with regard to reporting violations: 83.7 % of survey participants strongly agreed that it is important for HCP to be aware of the Regulations, 94.6 % strongly agreed that it is important for manufacturers, importers and distributors to be aware of the Regulations and 96.8 % either strongly agreed or agreed that it is their responsibility as a HCP to report violations. Only 13.1 % strongly agreed that the Regulations are adequately enforced by relevant authorities.

Higher median knowledge scores were found in the following survey participants:

- Those who strongly disagreed that the sections of the Regulations that apply to HCP are being adequately enforced by relevant authorities – 10 % higher score (95 % CI 1.1, 18.9, $P = 0.03$).
- Those who strongly disagreed that the Regulations would decrease the inappropriate use of designated products by caregivers – 10 % higher score (95 % CI 0.6, 19.4, $P = 0.04$).
- Participants who disagreed that representatives of designated products were mainly focused on promoting their products – 10 % higher score (95 % CI 2.6, 17.4, $P = 0.01$).

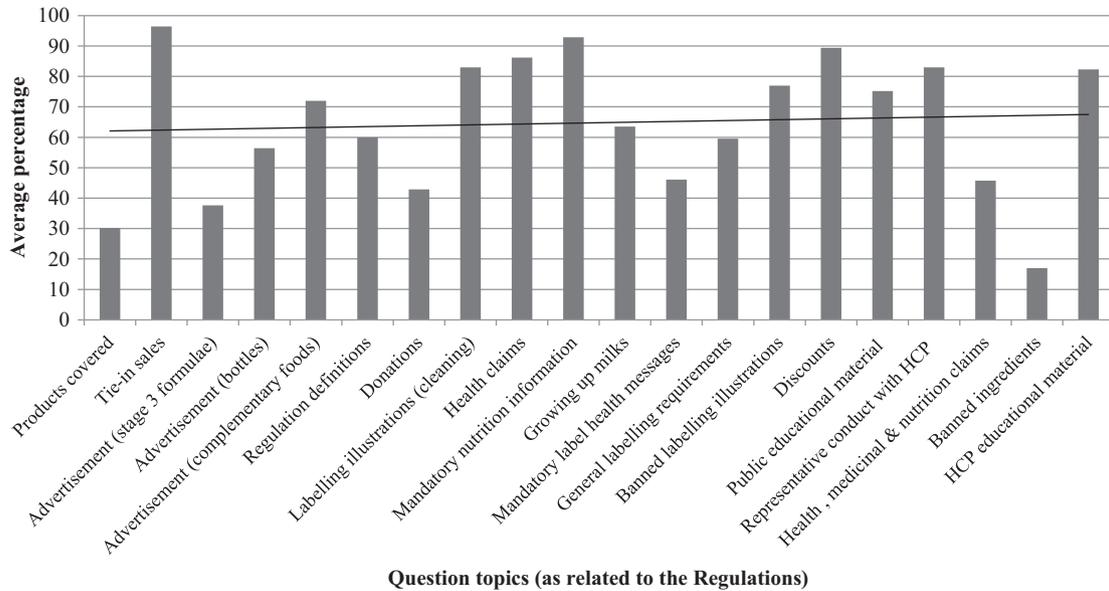


Fig. 2 Knowledge question topics and average percentages correct from the survey on perspectives of South African dietitians on the Regulations relating to Foodstuffs for Infants and Young Children completed by 282 registered dietitians, March–July 2017. HCP, Health care provider/(s). ■, Average percentage (per question); —, average percentage (overall)

The participants from the focus group discussions felt that enforcement is lacking in the sections pertaining to HCP. Focus group participants believed that the mothers they had interacted with had less knowledge about products controlled under the Regulations.

Practices

Participants' practices appeared to be mostly compliant with the Regulations. A hard or electronic copy of the Regulations was owned by 69.5% of participants, and 37.9% of participants were aware of the supporting document created by the DoH providing guidelines on interpreting the Regulations. Training related to the Regulations had been attended by 54.6% of participants and 41.1% knew to whom violations of the Regulations should be reported.

Participants agreed that the following aspects were most important when educating clients on labels: serving size (92.6%); preparation instructions (97.5%) and storage instructions (97.9%). Representatives of products covered under the Regulations were mostly compliant with the conditions, for example, 5/7 (71.5%) indicated that more factual information is given out to HCP. Participants visited by product representatives indicated that the relationship with them has changed, for example, 137/204 (67.2%) have put boundaries into place for meetings with representatives. Just under a third of participants (25.9%) indicated that they are always or often in situations in their working practice where the Regulations have relevance, 71.3% indicated that they always or often employ the principles of the Regulations with confidence, 47.5% of the dietitians indicated that they would always or often report a violation,

51.1% indicated that they would seldom or never accept gifts from product representatives and 69.5% of participants said that they make an effort to ensure designated products are not visible in their work environments.

Differences in median knowledge scores were found in the following participants:

- Participants who had a copy of the Regulations – 5% higher score (95% CI 2.2, 7.8, $P=0.00$).
- Participants who knew to whom violations should be reported – 5% higher score (95% CI 2.2, 7.8, $P=0.00$).
- Those who never consulted the Regulations – 10% lower score (95% CI -17.9 , -2.1 , $P=0.01$). This was confirmed by Spearman correlation coefficients ($r=-0.17$, $P=0.02$).
- Participants who report violations less frequently had significantly lower knowledge scores overall ($F_{4,256}=3.11$, $P=0.02$).
- Those who disagreed that nutrient reference values were important when educating clients – 5% higher knowledge score (95% CI 4.2, 15.7, $P=0.00$).

It was found that strongly positive perceptions towards the Regulations were related to more compliant or confident practices. For example, 100/215 (46.5%) of participants who strongly agreed *v.* 8/35 (22.9%) of those who only agreed that it was important for HCP to be aware of the Regulations always employed the principles of the Regulations with confidence ($\chi^2(3)=13.37$, $P=0.00$).

In an optional survey question, reasons given for not reporting violations comprised: uncertainty regarding the procedure, too much effort and time-consuming, a lack

Table 3 Main themes with relevant quotations from the focus group discussions (*n* 2) to assess dietitians' perspectives on the Regulations, comprised of registered dietitians (*n* 12) in Kwa-Zulu Natal South Africa, conducted in December 2016 and June 2017

Theme	Quotes from the focus group discussions that illustrate the theme
Less knowledge among dietitians and mothers about products controlled under R991	<p>'I think something that's changed a lot is interaction with reps. Because now they just come now and just leave something on your desk, they don't even bother to talk to you because they don't really have anything that they want to say to you because they're so worried.'</p> <p>'I think that's actually a detriment as well, to the professional because you aren't, you almost don't feel equipped enough to discuss product.'</p> <p>'Where does she get information from? (The mother) She'll go to her healthcare professional who was seen by the latest rep and that's what they'll probably relay to them. And... I'm sure it's difficult for the moms out there where to start. It's word of mouth at the end of the day, because they don't have the interaction of what is what. I mean... even for me who knows my categories, looking at new products that someone didn't familiarise me with it's difficult to interpret.'</p>
Non-compliance of other HCP	<p>'But I think that when, and for example, a nurse has been asked: 'which formula do you think is right for my baby?' She's going to give from her own experience. There's no evidence to support that, but because they've had experience with that, then that influences what they tell the mom.'</p> <p>'Doctors and nurses are saying "I'm not meant to be saying this... but this is what I recommend." Because a lot of moms say that the paed said I must take this. The midwife said I must take this, and I know it from the antenatal group chat that I'm on.'</p> <p>'The midwife from an antenatal group holds a lot of weight, and exactly that 'I shouldn't be telling them a brand, but...''</p>
The dietitians' role in support and enforcement of R991	<p>'I would definitely report it as well (<i>when asked if they would report a violation of R991</i>) because we as dietitians need to enforce it...'</p> <p>'It's there for a reason. And especially in shopping centres, if you see something then it's important to now, the gullible moms that we can't reach... need to be helped in other ways... And that's why they've brought it up, in this manner.'</p> <p><i>When asked what they feel their responsibilities are in relation to R991:</i></p> <p>'Just to make sure that we not accepting the pens and whatever the story is, that we are sticking to the Code completely ourselves. If we can't do it then... then I don't think we can expect anyone else. It's our baby.'</p> <p>'To train.'</p> <p>'Passing on information to other health care professionals.'</p> <p>'Police other health care workers... otherwise the nurses would just, I don't know...'</p> <p>'Do their own thing.'</p> <p>'And then reporting, reporting violations.'</p> <p><i>When asked what changes have been made in practices since R991:</i></p> <p>'We've taken, any branded posters or calendars we've taken everything down, covered up names on pens [<i>laughs</i>] so it's just the branding more that we've changed.'</p>
Discrepancy in practice between private and public sectors	<p>'I'd like to comment about, since I did comm. serv. last year it was a huge transition to private but I have noticed, I was in a rural area so the people that were using formula v. breast milk, it was a small percentage that was using formula... we saw a positive influence, of the Regulation on the community and... with regards to malnutrition and such, but when we come to the urban areas it's not translating, there's too much of a gap... between the two. So we need to now close that gap, and MBFI, this whole initiative it's only in government and that is a huge problem, that I personally feel and why is that gap there? It's because they not telling us about it, they not allowing us to enforce it.'</p> <p>'Whereas they have to pay extra (mothers who want to see a dietitian in the private sector). So they might get frustrated with that.'</p> <p>'But like you say it's not part of the service.'</p> <p>'In private it's a huge barrier, they don't want to use a dietitian.'</p> <p>'I think we in government maybe are put more under the microscope.'</p>
Lack of enforcement	<p>(<i>Referring to feedback after reporting a violation of R991</i>) '... the response isn't the best. Like the one time I did (report a violation), there was a court case with (formula company) about it, so that was fine they got quite a slap on the wrist. But then like, the ones with (wholesale distributor) I don't think anything ever happened with... I never got any feedback about that there was any consequences and with the other Facebook one that I complained about, it's a lot of effort to actually write that report and be upset about it and you send it all through and then like, nothing really happens from there.'</p> <p>'I think that it's still relatively newish and I think that there needs to be better enforcement of it. I don't think the, that the consequences, that when there are violations that they are getting addressed properly. It's not getting... it's great that it's legalised now, but I don't think it's actually getting taken seriously enough, but I think that it will get there and that it is practical and a step in the right direction.'</p> <p>'I think sometimes they go under the radar on social media.' (Violations)</p>

R991, the Regulations; Reps, representatives; HCP, Health care provider/(s); Paed, paediatrician; MBFI, Mother Baby Friendly Initiative.



of action taken and the lack of feedback after reporting a violation. Participants recognised that they have a role to play in supporting and enforcing the Regulations.

It was evident that some dietitians in the focus group discussions reported violations, but those that had seemed to be in the minority, only two of the twelve dietitians in the groups stated that they had reported a violation previously.

It was believed by focus group participants that new regulations are communicated better to public sector dietitians as they fall under the DoH's direct lines of communication. An interesting finding was that the participants working in the private sector felt that restriction of sponsorships was unnecessary; however, the participants in the public sector felt that this restriction was necessary and justified.

Enablers

The enablers selected most frequently were: 'Increase in other initiatives which support, protect and promote breast-feeding' (e.g. the Mother Baby Friendly Initiative) (82.3%); 'Greater awareness, compliance and positive changes by manufacturers, distributors and importers of designated products to be in line with the Regulations' (76.6%); 'Awareness creation by the DoH among HCP (working with infants or young children or in maternity care) of the Regulations' (73.4%); 'A more scientific and less promotional approach by the representatives of companies that manufacture, distribute or import designated products' (70.6%) and 'Increased training of HCP relating to the Regulations has taken place' (67.7%).

Additional suggested enablers that emerged from the optional open-ended question in the survey included: a more effective procedure for reporting violations, awareness creation among mothers, improved enforcement of the Regulations, collaboration with the private sector and breast-feeding organisations, and strengthening and enforcing the Regulations in private health care facilities.

Barriers

The barriers selected most frequently were: 'Lack of awareness of the Regulations among the general public' (82.3%); 'Lack of awareness of the Regulations among HCP' (81.9%); 'Lack of training of HCP on the Regulations' (75.5%); 'Other factors that prevent mothers from breast-feeding which undermine the goal that the Regulations aim to achieve; that is, improved breast-feeding rates. For example, lack of paid maternity leave' (70.2%) and 'Lack of training of enforcement officials on the Regulations' (66.7%).

Additional barriers suggested by the survey participants in the optional open-ended question included: poor communication from the DoH about the Regulations, non- or partial compliance from product representatives, the social

stigma around breast-feeding, lack of knowledge regarding the procedure to report violations among the public and HCP, conflicting information in the *Guidelines to Industry* document and the Regulations, as well as promotion of BMS on television shows.

The survey participants who answered the open-ended question felt that doctors, midwives, nurses, speech therapists, some dietitians, hospital managers and pharmacists specifically were not always supportive of the Regulations, particularly, in the private sector. Many reasons were given for this lack of support, including a lack of passion for breast-feeding, a lack of time and willingness to adequately support mothers to breastfeed, a lack of knowledge of the disadvantages associated with BMS, the ease of switching to BMS *v.* assisting a mother with breast-feeding problems and a lack of awareness, knowledge and understanding of the Regulations among certain HCP. Participants mentioned that there was also often a perception among mothers that breast milk was not filling enough or that infants have insufficient weight gain when on breast milk.

A moderate positive correlation was found between the number of barriers selected and the number of enablers selected using Spearman correlation coefficients ($r = 0.49$, $P < 0.00$). Scatter Plots and Pearson's χ^2 test indicate that those who strongly agreed that it was important for HCP to be aware of the Regulations listed more barriers ($\chi^2(14) = 25.36$, $P = 0.03$) and more enablers ($\chi^2(12) = 34.33$, $P < 0.00$).

Those who strongly agreed that it was important for HCP to be aware of the Regulations were more likely to choose the following barriers: 'Lack of awareness of the Regulations among manufacturers, distributors and importers of designated products' ($\chi^2(2) = 8.16$, $P = 0.02$) and 'HCP who could assist with enforcement of the Regulations by reporting violations are not doing so' ($\chi^2(2) = 7.45$, $P = 0.02$). Participants who strongly agreed that clients were being influenced by the media prior to the Regulations were more likely to select the option 'Lack of awareness of the Regulations among the general public' as a barrier ($\chi^2(4) = 13.88$, $P = 0.01$).

The focus group discussions brought up the influence of the media and the difficulty of regulating the area. The focus group participants in both groups were of the opinion that other HCP were not always compliant with the Regulations. The participants felt that other HCP are not always supportive of the Regulations either due to lack of awareness, a belief that it is not in their scope of practice or a lack of concern.

According to the focus group participants, enforcement of the Regulations needed strengthening. Currently, there is no team to take responsibility for enforcement. The procedure for reporting a violation was also

Box 1: Suggestions made during the focus group discussions

The Regulations should include dummies (pacifiers) and prohibition of the use of bottles in health care institutions.

The types of bottles and feeding cups available on the market should be controlled, in accordance with what HCP are advised to recommend to mothers and country appropriate. One respondent stated: 'We're try(ing to) not push people to buy bottles but there are so many bottles on the shelves, and are they the ideal feeding cups that have the increments, like the Sinapi cup?...You can't just go buy those, it's not like you actually can find something other than bottles because that's what they're selling.'

A standard scoop size for all BMS would be beneficial to prevent caregivers from reconstituting powdered milk incorrectly.

A summary of the Regulations should be made for easier reading and understanding. One participant said: 'If there was some way to summarise it, because I mean even if we do it in the Mother Baby Friendly Initiative training everyone is falling asleep. This is the section that everybody finds boring. And it's boring for us too. [Laughs] When you have people you know, half asleep. So I think if it was . . . if some way they could summarise it then, then we could also disseminate it easily'.

BMS should be made a prescription-only item to control its use, ensure that it is used safely and appropriately, and to control the accessibility.

The process for lodging a complaint needs to be made easier; for example, identifying a team responsible for enforcing the Regulations, and creating an online portal or a call centre to report violations.

identified as a barrier. Refer to the text in Box 1 for a summary of suggestions to improve the Regulations based on participants' comments during the focus group discussions.

Discussion

The study found that dietitians have an acceptable level of knowledge around the Regulations (64.8%). Those working in infant and young child feeding had a higher knowledge score. Overall, it was found that dietitians have positive perceptions towards the Regulations and the majority of practices were compliant. Positive perceptions tended to correlate with compliant practices. An 'Increase in other initiatives which support, protect and promote breast-feeding' was the most frequently selected enabler and 'Lack of awareness of the Regulation among health care providers' the most frequently selected barrier. The focus groups found that there is less knowledge among dietitians and mothers about products controlled under the Regulations, other HCP are not always compliant, dietitians have an important role to play in support and enforcement, there is a discrepancy between practice in private and public sectors and there is generally a lack of enforcement of the Regulations. This study can be considered a baseline study since it is the first in South Africa to investigate knowledge, perceptions and practices on the Regulations. The study was conducted nationwide and included dietitians from all provinces and sectors.

In the context of studies that assess dietitians' knowledge on certain topics, the findings of this study show some similarities. The mean knowledge score of 64.8% found

in this study was similar to that of Steyn *et al.* evaluating dietitians' knowledge of dietary supplements, which found a mean knowledge score ranging from 56.5 to 62.5%. Likewise, the older and (by default) more experienced participants had higher knowledge scores⁽¹⁹⁾. Comparable to a study conducted in the USA among dietitians, investigating knowledge and perceptions of intuitive eating which found that greater knowledge of the topic was linked to greater use⁽²⁶⁾, this study found that those with greater knowledge of the Regulations were more likely to report integration of the Regulations into practice. It could be argued that a knowledge score of 64.8% is less than impressive considering the topic involves legislative aspects of nutritional products and dietitians should be aware of this. It is plausible that the complexity of the document is a partial explanation. However, the dietitians that participated in the survey would (by default) be those who were more interested in the Regulations; thus, it is possible that the knowledge of dietitians in general could be lower.

If one uses the standard academic ratings to assess the level of knowledge, $\geq 50\%$ would be considered acceptable (a pass) and $\geq 75\%$ would be considered a *cum laude*. The results of this study indicate that better knowledge results in a better ability to practice in accordance with the Regulations; a better knowledge of how to report violations and more willingness to do so, avoidance of any unintentional promotion of designated products in the workplace and greater awareness of enablers and barriers. It was encouraging to find that improved knowledge seems to correlate with more supportive practices; this infers that training and education on the Regulations can lead to positive outcomes in implementation.



The study found a link between knowledge, positivity towards the Regulations and compliance and confidence in implementing the Regulations. It was interesting to find that a lack of awareness by the public and HCP was viewed as the two most prominent barriers and yet awareness creation by the DoH was viewed as a prominent enabler. A possible explanation for this is that awareness creation has been effected but has not been far-reaching enough to achieve satisfactory results beyond the DoH's immediate reach. It is also worth noting that the Mother Baby Friendly Initiative came up as a prominent enabler to implementation of the Regulations, and if this initiative were implemented in all facilities, the management and care of mothers would be more consistent and in line with the Regulations.

The dietitians who participated in this study felt that they had less knowledge on designated products since the passing of the Regulations. This may be a perception, since the intention of the Regulations was not to place restrictions on factual information, but rather to prohibit enticing information and marketing ploys by manufacturers of designated products. The Regulations also do not restrict interaction between HCP and the representatives, but dictate that the information shared must be scientific and factual. Nevertheless, there seems to be reluctance among dietitians to meet with representatives of companies that manufacture BMS and designated products and vice versa. This finding is not entirely negative, since, HCP and representatives should be cautious and ensure that they follow the law.

This study revealed that the enforcement of the Regulations is a barrier than requires attention. Champeny *et al.* suggest that the manufacturers, distributors, importers, retailers and wholesalers of designated products need to accept the bulk of the responsibility for complying with food regulations that have been nationally legalised⁽²⁷⁾. This would be a more realistic expectation than the Government appointing a task team to monitor and enforce the legislation, since funding will likely be an obstacle. It was encouraging to find that for the most part, industry seems to be compliant with the Regulations and product representatives have supportive perceptions towards the Regulations and are making an effort to comply with them. The health sector should be willing to cooperate with industry to an extent in order to win their full cooperation with regard to the Regulations.

The 2nd World Breast-feeding Conference 2016⁽²⁸⁾, held in Johannesburg in December 2016, highlighted the importance of raising awareness and involving communities in the monitoring of the WHO Code. Community or social mobilisation to support the Regulations in South Africa would be beneficial to increase its reach. The procedure for reporting violations of the Regulations was found to be a noticeable barrier; only 41.1% of participants knew where to report a violation. It is useful to explore ways in which this area could be strengthened. The NetCode,

which is a body created by the WHO to assist with the monitoring and enforcement of the WHO Code, has created a means of recording government monitoring activities online by filling in a universal reporting form and uploading the file⁽²⁹⁾. In Myanmar, a cell phone application was developed for WHO Code monitoring by the non-governmental organisation, Save the Children. The application was adopted by Myanmar's DoH and is apparently widely used throughout the country⁽²⁹⁾. Adopting a similar user-friendly application in South Africa, and creating awareness among HCP and the public of such a system could be one way to improve the challenges around reporting of violations.

In Senegal, the sale of BMS is restricted to pharmacies alone⁽²⁷⁾. One of the focus group participants suggested a similar idea of BMS becoming a prescription-only item. Restricting the availability of products on the market may be a possibility to prevent inappropriate marketing from taking place, decrease exposure to these products and ensure the products are used safely when needed.

Despite resistance from certain countries, companies and even HCP, legislating the WHO Code is without a doubt a vital step forward with a noble goal. Brazil is one of the leading countries in the regulation of BMS marketing, with action taking place as early as 1980 and the WHO Code being legislated in 2006⁽³⁰⁾. Since then, breast-feeding rates in Brazil have shown continuous improvement⁽³¹⁾.

The restriction of marketing of infant and young child feeding products needs to happen alongside various other programmes and initiatives that have a vested interest in improving infant and young child nutrition in order to realise the goal of providing every infant and young child with optimal nutrition. Such platforms might include breast-feeding awareness programmes among the public, breast-feeding organisations and health awareness events; for example, the International Baby Food Action Network, the WHO and La Leche League International, Breast-feeding Week, laws surrounding breast-feeding (maternity leave and expression breaks), Human Milk Banking and child malnutrition programmes.

The limitations of this study were that sampling for the survey participants was opportunistic and convenient; thus, no inferences or generalisations could be made based on the data collected and all statistical analyses conducted only pertained to the 282 respondents of the study. The desired response rate was not achieved, and approximately 83% of the targeted sample was obtained, which negatively influenced the strength of the findings. Under the enablers and barriers section of the survey, participants were provided with lists of enablers and barriers to choose from which may have introduced some bias. An attempt was made to reduce this bias by the addition of open-ended questions for further enabler/barrier suggestions. The qualitative component was based on two focus groups with a total of twelve participants, and thus data saturation was not achieved. And lastly, interpreting the results

was a challenge, since there was not an abundance of similar research available for comparative purposes.

In conclusion, this study was the first of its kind to investigate South African dietitians' perspectives on the Regulations. The mean knowledge score of 64.8% could be considered acceptable. It was apparent that most dietitians have accepted the Regulations and were integrating them into their practices. The enablers and barriers identified helped to determine the strengths and weaknesses surrounding the implementation of the Regulations and could offer valuable insight to policy makers and governments in the quest for universal legislation and implementation of the WHO Code.

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