The use of social media as a source of nutrition information

Megan Kreft* [iD], **Brittany Smith** [iD], **Daniella Hopwood** [iD] and **Renee Blaauw** [iD]

Division of Human Nutrition, Department of Global Health, Stellenbosch University, Cape Town, South Africa
Correspondence: mgnkrft@gmail.com

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Introduction: There is an increase in young people's engagement with social media (SM), specifically nutrition information. Nutrition misinformation is, however, prevalent on SM due to lack of professional gatekeeping of this user-generated content.
Objectives: The study aimed to assess the use of SM as a platform for obtaining nutrition information and how the accuracy thereof is evaluated.
Design: A descriptive cross-sectional study with an analytical component was conducted. Data were collected from 2 318 participants using a content- and face-validated self-administered online questionnaire. Descriptive statistics and relevant inferential statistics were used. A $p < 0.05$ indicates statistical significance.
Setting: The survey was completed by students from Stellenbosch University, South Africa.
Subjects: Undergraduate students (18–25 years) registered at Stellenbosch University (2021), South Africa ($n = 2\,318$).
Results: Of 2 318 participants (69% female), 1 615 used SM to access nutrition information, with YouTube being the most used platform for this purpose (96%). Females used SM significantly more than males ($p < 0.001$) and participants living in shared accommodation used SM significantly less than those in other living arrangements ($p < 0.001$). A minority (17%) of participants 'actively' turn to SM for nutrition information, while the majority (54%) engaged only if it happened to appear on their feed. The preferred nutrition content was 'what to eat in a day' (83%). Participants felt most comfortable following a registered dietitian (64%) for accurate nutrition information. Relatability (87%) was a characteristic that motivated participants to follow SM influencers and 16% trusted claims from health influencers on SM. Although 91% understood what evidence-based nutrition information means, 77% of participants struggled to determine the accuracy of nutrition information on SM, with females indicating significantly more difficulty than males ($chi^2 = 39$, $p < 0.001$).
Conclusion: The participants engaged with nutrition information on SM and understood what evidenced-based nutrition information is. However, the majority lack skill in determining information accuracy on SM. A dietitian was trusted most as a source of nutrition information.

Keywords nutrition, accuracy of information, policy, social media, nutrition information, dietetics

Introduction

Social media (SM) is an interactive mobile platform, where communities and individuals can create, co-create, discuss and share content generated by the users on the platform.[1] SM 'influencers' are SM users recognised for the enticing content they display on their profiles, which leads to popularity and subsequent success.[2] SM has become an important part of many people's lives; in South Africa alone some 40% of people have an SM account and spend an average of 8 hours 23 minutes online per day.[3] Young adults have the highest use of SM, with more than 50% being between the ages of 18 and 29 years.[2]

There are no policies in place regarding who is allowed to share health and nutrition-related information on SM. This, coupled with SM being riddled with 'user-generated content', is what contributes to misinformation. People sharing their opinions and personal experiences, plus the lack of professional gatekeeping of SM content, leads to unsubstantiated and illegitimate information appearing on SM.[2,4,5] The unrestricted nature and vast amount of nutrition information makes it a time-consuming and seemingly impossible task to evaluate the reliability and credibility thereof.[6] An SM profile's ability to be transparent and interactive online has been shown to increase users' perceived credibility of the information shared.[4] Research shows that SM users tend to accept nutritional information with no concern for qualifications of the source, but would doubt a nutrition claim if it lacks an

explanation.[7] Similarly, the abundance of nutrition misinformation can lead to mistrust of all sources, even credible sources. Users turn to SM not only for information but also for the associated social support, which is largely influenced by the perceived credibility and accuracy of online health communities.[8] There is a sense of urgency to investigate the perceived accuracy of nutrition information published on SM and develop tangible solutions to highlight the voices of those trained in human nutrition to drown out misleading and even harmful nutrition misinformation. Through the assessment of perceived accuracy, this research aimed to form a better understanding of the use of SM for nutrition information and the motivations behind this use. In addition, in doing so, forming a hypothesis of tools and recommendations that highlight SM pages and information that come from qualified nutrition professionals.

Methodology

The study aimed to determine students' use of SM to obtain nutrition information and how they assess the accuracy thereof. The objectives were to determine the time spent online and frequency of SM platforms used, type of nutrition information gathered, how this information was used, how students assessed the accuracy of the information and lastly which characteristics motivated students to follow SM profiles. Subsequently, the analytical component of this study set out to determine the differences in all the above, between genders, campuses, as well as place of residence, with the null hypothesis

being that there is no significant difference between these subgroups.

Study population

The study population for this descriptive cross-sectional study with an analytical component included all undergraduate students registered at Stellenbosch University at the time of survey completion in March 2021. Of this population, the sample included only those aged between 18 and 25 years as this group was recognised as the most avid SM users.[9,10] The exclusion of postgraduate and older students was made on the premise that they are likely to have other factors such as job responsibilities, more life experience and more years of study that could influence their nutrition knowledge and use of SM, thus affecting the results. There was no reason to exclude any SM platforms.

A minimum sample size of 377 was required to determine the proportion of students who use SM as a source of nutrition information with a precision of 5% and a 95% confidence interval. For subgroup analysis the appropriate sample sizes were calculated based on the number of groups to compare. We needed a minimum of 170 participants per group when comparing two groups (gender and campuses) and a minimum of 70 participants per group when comparing four groups (place of residence).

Method of data collection

Data were collected using a face and content-validated questionnaire, which was completed by an electronic survey (SunSurveys). The questionnaire took roughly 10 minutes to complete and consisted of 27 multiple-choice and open-ended questions. The questions were designed based on the objectives of the study and information from the literature. Content validity was confirmed through the contribution of a registered dietitian with experience using SM for nutrition education. Face validity was ensured via a pilot study where the 2020 final-year dietetic students completed the survey. All registered undergraduate students at Stellenbosch University were invited to participate through an official email communication. Participation was voluntary and anonymous.

Statistical analysis

Capturing and analysis of data was done using MS Excel (Microsoft Corp, Redmond, WA, USA) and STATISTICA (version 13.5, 2018; https://www.statistica.com/en/). The descriptive component was analysed by means of summary statistics.

The relationship between continuous dependent variables (hours spent on SM) and nominal independent variables (gender, campus, place of residence) were analysed using one-way ANOVA. The Bonferroni test was used to test for statistical significance between groups. Contingency tables were used to compare nominal dependent variables versus nominal independent variables; the associations are reported with maximum likelihood chi-square tests. Statistical significance of 5% was used in all hypothesis tests.

Ethical considerations

Ethical approval was obtained from Undergraduate Research Ethical Committee (UREC) (U20/10/095) at Stellenbosch University. Institutional approval was received and all participants completed online informed consent before participation.

Table 1: Participant demographics

Item	Category	n (%)
Gender	Male	705 (30%)
	Female	1 601 (69%)
	Other	12 (0.5%)
Place of residence	University residence	867 (37%)
	Private accommodation	416 (18%)
	Shared housing, e.g. flat	589 (25%)
	At home with parents/family	437 (19%)
Campuses	Stellenbosch main campus	1 989 (86%)
	Tygerberg campus	329 (14%)

Results

Of 2 368 participants who responded, 2 318 met the inclusion criteria. The participants, average age 19.9 ± 1.7 years, was mainly females (69%), from Stellenbosch main campus (86%) and living in university residences (37%) (Table 1).

Frequency of use of social media as a source of nutrition information

On average people spent around four hours per day on SM. Females spent significantly more time on SM compared with males ($p < 0.001$) and those in shared housing used SM significantly less than those in other places of residence ($p < 0.001$) (Table 2).

According to Table 2 the most used platform was Instagram, representing 87% ($n = 2 009$) of respondents, followed by YouTube at 83% ($n = 1 925$). Facebook had the highest daily usage (40%, $n = 875$) while YouTube had the highest hourly (26%, $n = 570$) and weekly (54%, $n = 1 197$) usage. Among the 1 615 participants who reported using SM to access nutritional information, active use of SM for sourcing nutrition information was reported by 17% ($n = 379$), with the majority (54%, $n = 1236$) reading nutrition information only if it happened to appear on their feed. Furthermore, only 13% ($n = 203$) of participants reported never intentionally reading nutrition information on SM. There was no significant difference in SM usage for accessing nutrition information between genders ($p = 0.24$) and campuses ($p = 0.067$); however, places of residence showed a significant difference ($p = 0.013$).

Type of nutrition information searched for and preferred on social media

Some 55% ($n = 1 319$) of participants reported having a specific health condition or category concerning which they seek information. These included alterations in body composition (26%, $n = 601$), digestive issues (25%, $n = 572$), special dietary requirements (20%, $n = 453$), eating disorders (17%, $n = 403$), hormonal conditions (15%, $n = 350$) and autoimmune conditions (2%, $n = 44$).

SM has a variety of content that can be created and consumed by users. As illustrated in Figure 1, 'what I eat in a day' posts or videos were the most liked content by participants (83%, $n = 1 342$). Recipes and short videos were also highly preferred. Furthermore, females expressed more interest in recipes, general health tips, short videos and 'what I eat in a day' posts or videos compared with males.

Table 2: Social media usage

Social media usage (hours per day)			
Variable	Sub-category	Mean ± SD	*p*-value
Campus	Tygerberg campus	4.1 ± 2.7	*p* = 0.01
	Main campus	4.6 ± 3.3	
Gender	Females	4.6 ± 3.4	*p* < 0.001
	Males	4.1 ± 2.9	
Place of residence	Shared housing	4.0 ± 2.7[a]	*p* < 0.001
	University residence	4.6 ± 3.5[b]	
	Private accommodation	4.8 ± 3.3[b]	
	Family home	4.6 ± 3.2[b]	
Social media platforms used in general (n = 2 318)			
Platform	***n***	**%**	
Instagram	2 009	87	
YouTube	19 25	83	
Facebook	1 000	43	
TikTok	852	39	
Twitter	473	21	
Social media platforms used to access nutrition information (n = 1 615):			
YouTube	1 542	96	
Instagram	1 013	63	
Facebook	215	13	
Google	128	8	
Pinterest	70	5	
TikTok	54	3	
Other	39	2	
Reddit	18	1	
Scientific articles	11	1	
Twitter	9	1	

SD: Standard deviation.
One-way ANOVA and Bonferroni test for multiple comparisons: means in a row without a common letter (a, b) differ significantly, *p* < 0.05.

Characteristics motivating respondents to follow specific social media accounts

YouTube was reported as the most (96%, *n* = 1 542) used platform for accessing nutrition information, followed by Instagram (63%, *n* = 1 013) (Table 2). The reason participants enjoyed using these platforms was reported to be because the information provided is easily followed and understood (70%, *n* = 1 150), it has good quality pictures and videos (54%, *n* = 898), it has a variety of readily available nutrition information (54%, *n* = 887), popular influencers post nutrition information (33%, *n* = 545) and the belief that health professionals use these platforms to provide nutritional advice (30%, *n* = 496).

Some 53% (*n* = 860) of respondents follow pages dedicated to providing nutrition information. These participants were asked to state the type of page or the qualification of the person's profile that they reported following. The most followed category was nutritionists (35%, *n* = 297) and dietitians (29%, *n* = 252) (Figure 2). Participants admit to feeling most comfortable following registered dietitians for nutrition advice (64%, *n* = 1029).

Figure 3 shows the qualities that respondents seek out from the people they follow. The top qualities include relatability (87%, *n* = 1411) and sharing of personal experience (84%, *n* = 1352).

Significant gender differences were found for aspects like popularity (*p* = 0.002), talent (*p* = 0.018), relatability (*p* < 0.001), qualification (*p* = 0.008) and being evidenced-based (*p* = 0.023).

How participants make use of nutrition information obtained on social media

In this respect, 64% (*n* = 1 036) of participants apply nutrition information obtained from SM only if relevant to their own lives, 38% (*n* = 616) if they happen to read it and 13% (*n* = 214) daily. A total of 26% (*n* = 420) of respondents apply this information if scientifically proven. Respondents reported feeling most comfortable adopting nutrition information if the source was someone with a dietetics degree (97%, *n* = 1 539). A medical doctor and someone with personal experience represented 94% (*n* = 1 511) and 88% (*n* = 1 424) respectively, with the least (41%, *n* = 668) trusted source being someone with an online nutrition qualification.

Trust in a claim was shown to be influenced by four main factors: it is written by a professional in the field of nutrition or health (66%, *n* = 1 086), it is backed by an explanation from a qualified party (63%, *n* = 1 039), the information has links to scientific articles (53%, *n* = 883) and it is supported by an explanation (51%, *n* = 839). However, when participants were asked who they trust to provide accurate information online, only 24% (*n* = 393) said 'dietitian', 22% (*n* = 363) said a 'qualified person' and 18% (*n* = 292) said 'nutritionist'. Additionally, 61% (*n* = 986) of participants knew that registered dietitians are required to follow strict ethical guidelines as to their use of SM.

The majority (91%, *n* = 1 471) understood that evidence-based information means it is scientific, researched and proven to be nutritional and healthy with 8% (*n* = 131) believing that it is an individual's personal experience. However, 77% (*n* = 1 240) admitted to finding it difficult to determine whether the information they read online is scientific and correct, with females (79%, *n* = 981) appearing to struggle more than males (21%, *n* = 255) (chi^2 = 39, *p* < 0.001).

Two tools that could be used to assist SM users in identifying credible nutrition sources were investigated. The first was labelling a post as fact-checked by a body of experts and the second was the use of a green verification tick, which indicates that the profile belongs to a qualified healthcare professional. The latter was the most preferred method (70%, *n* = 1 126).

Discussion

The study aimed to determine the use of SM as a source of nutrition information, and how the accuracy thereof is perceived by Stellenbosch University students. The study found that the participants utilised SM to engage with nutrition information, with the most used platforms being YouTube and Instagram. Participants look for relatable and personal content from SM pages and value good quality photos and videos; such characteristics motivated individuals to follow a specific SM page. The participants trusted dietitians most as a source of nutrition information, although the majority of them would still trust and implement nutritional advice from someone with personal experience in a particular topic. Trust in nutrition claims was more likely if it were to be written by a professional in the field or if there were scientific links to the information given. Most participants admitted to finding it difficult to determine whether the information they are reading is scientific. Interestingly, there was no significant difference in the ability to distinguish between accurate and inaccurate nutrition
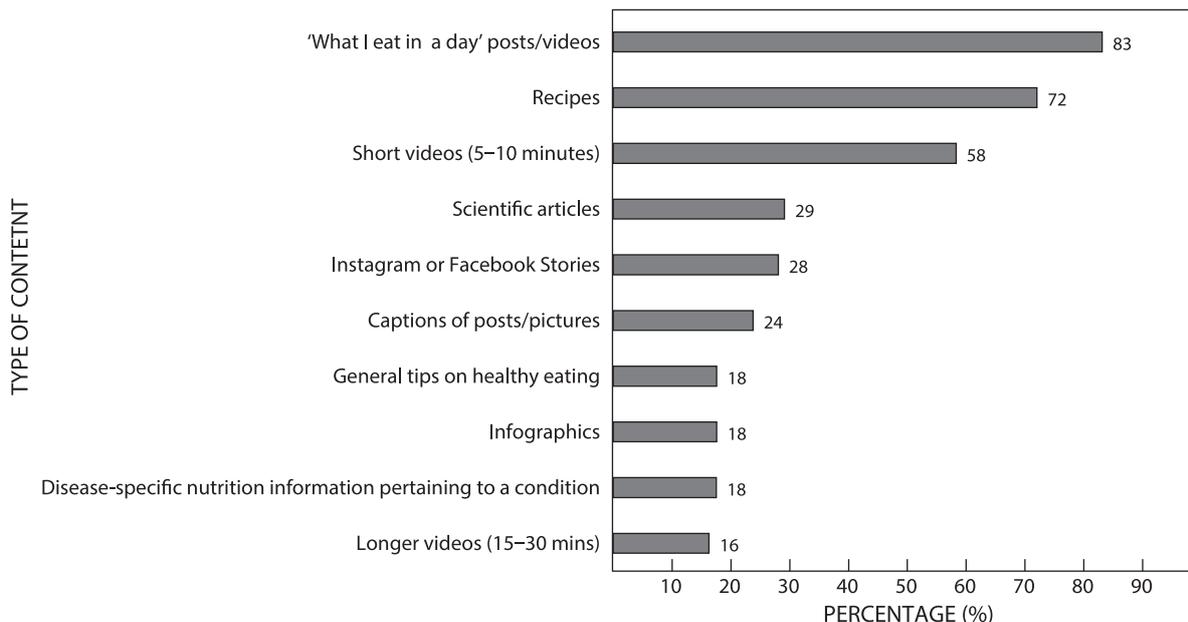
Figure 1: Graph showing the type of content preferred by participants.

Use of social media as a source of nutrition information

The literature demonstrates that SM platforms are not commonly used as a component of nutrition interventions;[11] however, over half of the participants followed nutrition-based pages on SM, with over two-thirds intentionally reading nutrition information on either a weekly or monthly basis. Furthermore, most participants have unintentional exposure to this information, reading it if it appears on their feed. This is supported by literature explaining how users can access information without intentionally looking for it.[12] SM gifts people with the autonomy to express their opinions and any content they choose freely; this includes an abundance of nutrition misinformation, which outweighs the credible information.[5,13] Accessibility to information can be useful but, in this context, also dangerous, as unsupported, non-evidence-based information and opinion can spread rapidly and have harmful effects on users consuming it.[13–15] The number of influencers far outweighs the number of healthcare professionals on SM.[16] A 2020 study further highlights the need for healthcare professionals to use SM to share their knowledge and support evidence-based information, and another study noticed a disparity in SM platforms used by healthcare professionals compared with the public.[17,16] Healthcare professionals are apprehensive about advocating against misinformation as there is a chance of blurring personal and professional boundaries between patients and the public. However, the potential harm of misinformation outweighs this risk greatly.[17,18] Healthcare professionals have the knowledge and skill to share evidence-based health information and should receive the appropriate training to feel confident and safe doing so in the context of SM.[17]

Type of nutrition information gathered

Content such as 'what I eat in a day' videos and recipes were the most preferred. The literature encourages incorporating nutrition information into content that users already enjoy viewing, such as videos, to increase engagement.[19] For example, dietitians could provide a pasta recipe and advise users to use wholewheat pasta instead of white pasta to increase fibre intake. Interestingly,
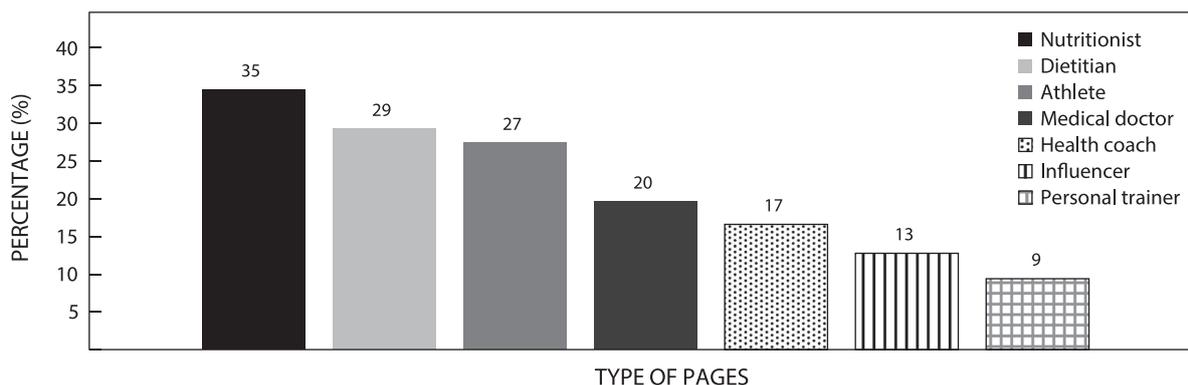
The literature demonstrates that background in health education had no effect on their ability to identify accredited sources of nutrition information. Lastly, the green verification tick was the proposed authentication method most chosen by participants. This would assist social media users in identifying qualified healthcare professionals on social media.

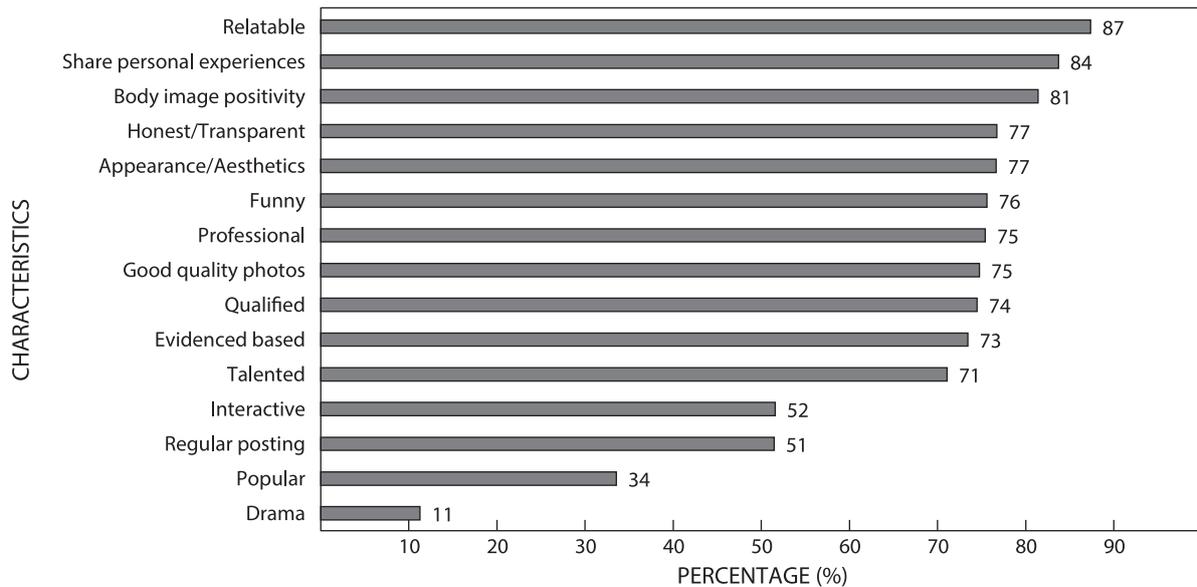**Figure 2:** Type or qualification of the page followed.

Figure 3: Qualities that lead respondents to follow an influencer.

the preference for using infographics was lower than anticipated, considering it is the medium health professionals use to convey their messages regarding diseases and the treatment thereof.[20] This preferability amongst SM users suggests that future target markets need to be identified and analysed for health professionals to choose which medium would be preferred by the target audience and also most effective. In this way dietitians could increase their reach and impact.

Popular characteristics of content creators
Information that is easy to follow and understand, coupled with high-quality photos and videos, comprised the characteristics that participants enjoyed most about the SM platforms they used, namely YouTube and Instagram. This correlates with literature that explains how audio-visual content displays a visible representation of the lives of those they are following, and exhibits face validity.[20] The literature demonstrates that good quality photos determined whether or not they read the text; similarly the study findings demonstrated that participants chose to follow pages that have good quality photos and videos more than those that are evidence-based, thus emphasising that dietitians should focus on the quality of their photos and video and not solely the information provided.[21] This field of graphic design, photography and video-editing is an area where dietitians require training or assistance.

Relatability and sharing of personal experiences were the main qualities motivating respondents to follow an influencer's account with a participant stating, 'Most of the pages I follow [are] run by real people. I don't trust the ones where you don't see the person running the account.'[22] Research demonstrates that once people feel as though they know someone, or have developed a relationship with them, their trust in them strengthens.[23] This is a reason why SM influencers can generate large followings.[23] This highlights how users want to see their personality and have insight into their life, which in turn promotes a trusting relationship. These popular characteristics somewhat contravene the guidelines set out by ADSA (Association of Dietetics of South Africa) for dietitians conducting themselves on SM.[24] To improve engagement on SM, the restrictive guidelines dividing professionalism from personal relationships could perhaps be more lenient, in pursuit of an

increased influence on SM. For example, dietitians could focus on sharing personal experience in the context of their lifestyle or hobbies, rather than their personal diet or health condition, to refrain from crossing that ethical boundary, while simultaneously reaping the benefits of being more transparent about their life on SM.

Implementation and trust of nutrition information obtained from social media
Participants report applying nutrition information in their own lives; however, only a small percentage do this daily. This could be due to inconsistent and conflicting nutrition messages. The literature supports this idea, emphasising the need for consistent information to reduce confusion and reinforce the credibility of evidence-based nutrition information.[25] Although the participants of this study understood that personal experience does not mean 'evidence-based' information, the majority still admitted being willing to trust and implement this nutritional advice. This suggests that, in this study, relatability is an important factor in perceiving information as trustworthy. Being passionate, well-read or experienced in a particular nutrition issue does not qualify one to share nutrition advice. This is, however, a frequent occurrence on SM, as every user is also a content creator, which emphasises the need for nutrition experts, such as dietitians, to increase their utilisation of SM to share their knowledge.[26]

A dietitian was the most trusted source of nutrition information. Contrastingly, the SM pages participants followed for nutrition advice are those of nutritionists. Additionally, the second-most followed pages were those of 'qualified people'. This disparity between whom they trust versus whom they follow on SM suggests confusion as to who the nutrition experts are. A 'nutritionist' may or may not have a degree in nutrition.[27] Due to continued misunderstanding between the roles of nutritionists and dietitians, the Academy of Nutrition and Dietetics introduced the credential 'Registered Dietitian Nutritionist' (RDN) to highlight that 'all registered dietitians are nutritionists, but not all nutritionists are registered dietitians'.[28] The 'RDN' credential is not yet used in the South African context to replace 'RD', which could explain the persistent misunderstanding of who the true nutrition experts are. Lastly, participants were more likely to trust and implement a nutrition claim on SM if it were to be written by a

professional in the field. This seems to be problematic, as it is now realized that the qualifications of true nutrition experts are not understood. It is further explained that providing one's credentials is a way of accrediting the source, thus perhaps more emphasis should be placed on making the credentials of credible nutrition sources more visible on their SM pages.[29]

Perceived accuracy of nutrition information on social media

Over three-quarters admitted to finding it difficult to determine whether the information they are reading is scientific and correct, suggesting that respondents might struggle to identify how evidence-based nutrition information is presented online. The literature illustrates the ability of scientists to easily differentiate between credible and unreliable information and sources compared with the public, who lack this skill.[24] Interestingly, there was no significant difference in the ability to distinguish between accurate and inaccurate nutrition information between students from the medical and health science campus and those from the main campus, suggesting that a background in health education had no effect on their ability to identify accredited sources of nutrition information. This highlights the need to take care when producing nutrition content, ensuring that it is not just evidence-based but easily understood. A 2018 research paper further described the need to improve nutrition education for medical professionals, possibly because health knowledge does not always equate to, or include, nutrition knowledge.[30]

Current Instagram policy allows any person to 'name' their profile under the category 'nutritionist'. This is problematic as there are no criteria needed to do this; therefore, any user may label themselves with this qualification. The literature highlights the challenging yet essential need to check the credibility of internet-based nutrition information,[6] which suggests the need for a verification system to authenticate SM pages providing credible, evidence-based information. Two tools, namely the green verification tick and 'fact checked' label, were proposed to be used by SM platforms to support this online authentication concept.

The idea is to award healthcare professionals' SM pages the green verification tick, upon presenting proof of their qualification, so that SM users may easily identify credible sources of health and nutrition information. This concept echoes the existing blue verification tick used on several SM platforms to authenticate celebrities' profiles, usually coinciding with a large following.[31,32] The green verification tick would be awarded based on qualifications and not popularity. This tool was most preferred by respondents and when asked who participants trusted for nutrition information, one respondent stated, 'If the person is verified, I would feel more inclined to trust them'. Being able to distinguish between a layperson and a professional could encourage users to read and apply the information that is both accurate and evidence based. Dietitians play a role in policy-making for public health and safety, and this is an area where dietitians could work with SM platforms to help reduce confusion surrounding nutrition information and who the nutrition experts are. This could help drown out potentially harmful nutrition misinformation and contribute to a scientifically sound, more trustworthy online space.

Limitations

The study questionnaire proved to be the main limiting factor. Although both face and content validity were assessed, no testing was done with a non-dietetic group. It would have been beneficial to gain insight into the non-healthcare person's understanding of the questionnaire. Some questions were written in a way that could have guided or prompted the participant's answer. Lastly, due to non-random sampling (volunteer-based), the results could not be generalised to the population and represented only the sample. Additionally, 4 255 students clicked on the initial survey link while only 2 367 students finished the survey, the reason for which is unknown.

Recommendations

We suggest that SM platforms should possibly change their policies regarding the displaying of nutrition information. Additionally, the dietetic curriculum of universities should include guidelines and training on the importance of dietitians' engagement in SM. This research provides preliminary guidance on ways in which dietitians could maximise their following and increase the influence of credible sources of nutrition information on SM. Further research is needed to explore content and characteristic preferability amongst users of SM in South Africa. Moreover, the ADSA SM guidelines should be reassessed and possibly redeveloped to allow registered dietitians to be more relatable and to build trust with users, while still adhering to ethical guidelines set out by HPCSA and maintaining professionalism and evidence-based principles. It would be interesting for researchers to investigate the knowledge and understanding of nutrition-specific information between dietetic students and other health study students to see if there is a difference in the ability to identify accurate nutrition information on SM. Additionally, more investigation is needed into the effectiveness of the green verification tick and whether it will translate to the increased following of credible profiles, together with trust in and implementation of the information provided.

Conclusion

The study findings have illustrated that SM is used to access and implement nutrition information, and also highlights the inability of participants to assess whether nutrition information on SM is evidence-based and correct, as well as the confusion regarding who the true nutrition experts are. This study reveals the characteristics resulting in SM influencers' large following, motivating the need to reassess the ADSA SM guidelines. This could allow dietitians to provide insight into their own lives, making them more relatable, increasing their following and assisting in building a trusting relationship with SM users. In addition to dietitians' increased engagement on SM to amplify credible sources, SM platforms could adapt their policies to include verification systems. The proposed green verification tick is an effort towards minimising the harmful effects of misinformation and strengthening the voices of those qualified to share nutrition information.

ORCID
Megan Kreft http://orcid.org/0000-0003-3869-6229
Brittany Smith http://orcid.org/0000-0003-1452-2654
Daniella Hopwood http://orcid.org/0000-0002-3066-0312
Renee Blaauw http://orcid.org/0000-0001-7413-5918

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