

1-1-2018

Social media in dietetics: Insights into use and user networks

Yasmine Probst

University of Wollongong, yasmine@uow.edu.au

Qingcai Peng

University of Wollongong, qp558@uowmail.edu.au

Follow this and additional works at: <https://ro.uow.edu.au/ihmri>



Part of the [Medicine and Health Sciences Commons](#)

Recommended Citation

Probst, Yasmine and Peng, Qingcai, "Social media in dietetics: Insights into use and user networks" (2018). *Illawarra Health and Medical Research Institute*. 1314.
<https://ro.uow.edu.au/ihmri/1314>

Social media in dietetics: Insights into use and user networks

Abstract

Aim: Social media has transformed the interaction between healthcare professionals and consumers, yet research of its use in dietetics is limited. The aim of this study was to investigate the influence of dietetic user networks on use of social media and test the applicability of a social media metrics tool to determine influential users.

Methods: An online survey about social media use and practices based on the scientific literature was developed and implemented online with dietitians. Feasibility of a social media metrics analysis was conducted via Twitter using the NodeXL metrics tool to determine influential dietetic networks based on four measures of network centrality (betweenness, eigenvector, closeness and degree).

Results: The survey (n = 340) revealed social networking sites were the most widely used (by user) (n = 282) and micro-blogging was the most regularly used (by frequency of use). Among respondents who used social media in a professional capacity (n = 130), the greatest benefit was communicating internationally and remotely while the delivery of health care was of least benefit. The majority of respondents (87.3%) indicated their primary efforts were to maintain e-professionalism. Time restraints (18.6%) and not knowing where to start (18.6%) were common barriers to use. Highly influential connections between users were observed from network visualisations of dietitians in Australia and the United States.

Conclusions: Professional use of social media among dietitians needs to be monitored over time for shifts of influential networks. Influential users from key networks can be identified from metrics analyses and should be engaged via professional bodies to upskill new users.

Disciplines

Medicine and Health Sciences

Publication Details

Probst, Y. C. & Peng, Q. (2019). Social media in dietetics: Insights into use and user networks. *Nutrition and Dietetics*, 76 (4), 414-420.

Social media in dietetics: Insights into use and user networks

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

Abstract

Aim: Social media has transformed the interaction between healthcare professionals and consumers, yet research of its use in dietetics is limited. The aim of this study was to investigate the influence of user networks on dietetic use of social media and test the applicability of social media metrics for user impact.

Methods: An online survey about social media use and practices based on the scientific literature was developed and implemented online with dietitians. Feasibility of a social media metrics analysis was conducted via Twitter using the NodeXL metrics tool to determine influential dietetic networks based on four measures of network centrality (betweenness, eigenvector, closeness and degree).

Results: The survey (n=340) revealed social networking sites were the most widely used (by user) (n=282) and micro-blogging was the most regularly used (by frequency of use). Among respondents who used social media in a professional capacity (n=130), the greatest benefit was communicating internationally and remotely while the delivery of health care was of least benefit. The majority of respondents (87.3%) indicated their primary efforts were to maintain e-professionalism. Time restraints (18.6%) and not knowing where to start (18.6%) were common barriers to use. Highly influential connections between users were observed from network visualisations of dietitians in Australia and the United States.

Conclusion: Professional use of social media among dietitians needs to be monitored over time for shifts of influential networks. Influential users from key networks can be

- 1 identified from metrics analyses and should be engaged via professional bodies to
- 2 upskill new users.
- 3 **Keywords:** Dietitian, health communication, internet, nutrition, social media, survey
- 4

1 **Introduction**

2 Social media is a form of participative Internet use that allows users to create and share
3 content via social networking services (Twitter, Instagram, Facebook), collaborative
4 content development (wikis, blogs) and advanced networking (Second Life, podcasts).
5 Unlike read-only Internet, social media allows for exchange of information which offers
6 a platform for healthcare professional and consumer interactions.^{1,2} Social media
7 platforms are the predominant lenses through which disease treatment and prevention
8 communications are viewed.³ Early studies suggest that the growing use of social
9 media⁴ had a strong impact on dietitians with reduced demand for dietetic services.⁵
10 Thus, it is imperative for dietitians to understand the opportunities for social media and
11 related challenges for this method of communication.

12 Studies of health professionals' use of social media have been conducted evaluating its
13 use in facilitating communication.^{6,7} In the medical profession the concept of e-
14 professionalism the "*attitudes and behaviours that reflect traditional professionalism*
15 *paradigms... manifested through digital media*"⁸ emerged from these evaluations with
16 the rise of social media. Concern was raised with regard to the impact of messages to
17 the public and patients, the application of professional medical practice to an online
18 environment and reflection of unprofessional content on the profession overall.⁹ These
19 concerns have been echoed in the field of dietetics though compared with other health
20 professions, there are few studies related to dietetic use of social media.^{10,11}

21 Social media research methods in dietetics are limited to the exploration of education
22 messages using surveys or content analysis methods. Used correctly, qualitative
23 analyses can provide valuable insights. For example, content analyses of Facebook
24 breast cancer support groups revealed a significant role for awareness-raising and

1 support-seeking and the related focus groups identified social media influence on the
2 eating behaviours of these patients.¹² While such outcomes are valuable for engaging a
3 group of social media users they cannot measure changes over time.

4 Objective reporting of social media in dietetics may be limited due to the complex
5 methods of analysis that are required. For example in public health, Twitter streams
6 were tracked to measure public concern during the Influenza AH1N1 pandemic. Public
7 sentiment was related to the outbreak whilst also tracking and measuring disease
8 activity.¹³ This approach used time stamped Twitter posts clustered by the regions of the
9 users as well as Influenza like symptom posts and Centre for Disease Control Influenza
10 Reporting Regions applied to a Support Vector Regression model. The research was
11 deemed accurate for tracking Influenza spread using social media symptom posts.

12 Similarly, social media metric analyses can create an objective measure for a topic of
13 discussion or person of influence allowing for a picture of the current situation to be
14 created.

15 Originating from the marketing discipline, social media metrics can be used in health
16 promotion evaluation to measure marketing-related indicators such as exposure, reach,
17 and engagement.¹⁴ Metrics analyses focus on ‘how’ individuals in a network connect to
18 each other¹⁵ and have not been widely used in health, despite the popularity and rapid
19 growth of social networking platforms. Thus, NodeXL, a social networking metrics
20 analysis tool, will be used in the present study to demonstrate its feasibility. The aim of
21 this study was to explore dietetic use and practice with social media and to determine
22 influential dietetic networks based on four measures of network centrality (betweenness,
23 eigenvector, closeness and degree) in Twitter.

24

1 **Methods**

2 This mixed methods study consists of two components, a cross-sectional online survey
3 of dietitian social media use and practices as well as a social media metric analysis of
4 dietitian networks to determine influential users. This study followed the Checklist for
5 Reporting Results of Internet E-Surveys (CHERRIES) statement (See supplementary
6 material).¹⁶

7
8 **Online survey:** An 18-item stagnant question-style survey was developed based on the
9 scientific literature by identifying potential issues or concerns. The literature was used
10 to determine known uses, benefits, challenges and barriers from other health professions.
11 The survey was tested for face validity with dietitians (n=5) and nutrition students (n=5)
12 by convenience sample. The exploratory, open, voluntary survey investigated the
13 dietetic use of social media and was administered online via Survey Monkey
14 (SurveyMonkey Inc., San Mateo, California, USA, www.surveymonkey.com) for a one
15 month period to a targeted convenience sample. Question styles included dichotomous,
16 multiple choice, likert scale and rank order questions. Question response options were
17 created based on common areas extracted from the scientific literature as outlined above.
18 An 'other' open-response options were added for the personal and professional use,
19 technology used, benefits, challenges, concerns and barriers to use questions allowing
20 for unique responses that differed from other professions. Demographic data and
21 personal use of social media data were collected from all participants. Participants who
22 used social media in a professional capacity were asked about their professional use
23 while those did not use social media in a professional capacity were asked about their
24 barriers to social media use in a professional capacity. Questions were displayed two to

1 four to a screen to minimise the completion time and no questions beyond the consent
2 and use of social media in a professional capacity were deemed mandatory.
3 Respondents could move between questions as required. All members of the Dietitians
4 Association of Australia currently working in Australia were considered eligible,
5 regardless of whether they had used a social media platform. An advertisement was
6 distributed via the weekly email newsletter including a link to the survey. A \$50 gift
7 card incentive was offered to all participants.

8 De-identified demographic and personal use of social media data were collected from
9 all consenting participants. The survey assessed professional use of social media,
10 including the frequency, benefits, problems, journalistic practices, and perceptions
11 related to e-professionalism. The [blinded for review] Human Research Ethics
12 Committee approved the study (HE11/141) and tacit informed consent about all
13 elements of the survey was obtained by completion of the first question.

14

15 Social media metrics: NodeXL, an open-source social media network analysis and
16 visualisation tool as an add-in to Excel was applied to Twitter data for dietitians. The
17 networks of two Twitter public lists, 'Dietitians-down-under' (Australian dietitian
18 Twitter users) 'Dietitians' (American dietitian Twitter users) were obtained on the same
19 day.

20 NodeXL provides network graphs referred to as network visualisations and computes a
21 range of graph metrics: degree centrality, betweenness centrality, closeness centrality
22 and eigenvector centrality. Degree centrality measures the total number of connections
23 linked to a vertex (a social media user); betweenness centrality captures the disruption
24 of connections between other vertices in a network caused by removing the user from

1 the network; closeness centrality measures the average distance between a user and
2 every other user in the network and eigenvector centrality is a measure of influence
3 **Figure 1**¹⁷ shows the different types of centrality with each ring indicating a user and
4 users A, B and C linked via a different measures of centrality.

5

6 Data analysis: All respondent survey data was analysed using SPSS 22.0 for Windows
7 (SPSS, Inc., Chicago, IL). To compare the proportion of demographic subgroups in the
8 use of social media, cross-tabulations were created between use of social media in a
9 professional/personal capacity and age groups, gender, geographic areas and work
10 settings, with Pearson's chi square analyses as appropriate. Alpha was set at 0.05 and no
11 statistical corrections were applied. Some demographic variables were collapsed to
12 avoid statistical test violations. Age groups 46-55 years and >55yrs were grouped
13 into >45 years; geographic areas remote and very remote were grouped into remote;
14 work settings community and government were grouped into public health, and
15 education and research were grouped into academic. The responses to the frequency of
16 use were condensed into dichotomous variables. Responses of, "never" were considered
17 as "not used" and all the other responses grouped as "used". Likert scale questions for
18 perceived benefits of using social media were coded and mean \pm SD scores calculated
19 and ranked. The barriers to use question responses were analysed using content
20 analysis¹⁸ whereby common topics were extracted and grouped to aligned with each
21 area.

22 For the NodeXL analyses, the degree centrality to opacity was mapped for
23 visualisations of network metrics. An increased degree centrality of a vertex, the more

1 opaque it appears. Clusters were identified and mapped based on connectedness
2 between vertexes (social media users).¹⁷

3

4 **Results**

5 A total of 342 respondents (approx. 7.1% DAA membership), determined by IP address,
6 attempted the online survey with two respondents' not progressing (99.5% response rate,
7 73.8% completion rate). IP address was used to avoid duplicate entries during the period
8 the survey was open. All responses were within the expected time stamp for survey
9 completion. Unique site visitor information was not available. Of the respondents, 37.5%
10 used social media in a professional capacity. The majority of professional social media
11 users were in the 26-25 year age group (44.8%) while 51% of those aged 36-45 years
12 were more likely to use social media for professional purposes. The largest proportion
13 (70%) of non-professional users were those aged <26 years. Respondents were
14 primarily (75.3%) from a metropolitan location with only 4.8% located in a rural/remote
15 area. Professional users were primarily (71%) employed in an academic field while the
16 majority (68%) of non-professional users were employed in a community setting (70%)
17 followed closely by a clinical role (68%). Only 3% of respondents were male.
18 Professional use of social media was significantly related to the work setting (χ^2 30.430,
19 $p = 0.00$), with dietitians employed in academic and industry/government settings more
20 likely to use social media in a professional capacity (**Figure 2**). Among the 130
21 respondents who used social media in a professional capacity, discussion forums were
22 the most widely used (66.4%, $n = 87$), whereas wikis and micro-blogging sites were
23 used by only 28.2% ($n = 37$) and 33.6% ($n = 44$) of respondents, respectively. Dietitians
24 tended to use Twitter regularly showing, there was a clear preference for microblogging

1 tools. Facebook was only used in a professional capacity by 76 respondents, whereas it
2 was the most popular (n=282) social media platform in a personal capacity with 97
3 respondents reportedly using it regularly.

4 Chi Square analyses showed significant relationships between the proportion of user
5 work settings and using blogs, and between proportion of the age groups and the use of
6 podcasts ($p = 0.002$). Blogs were more widely reported by respondents employed in
7 non-hospital clinical settings, and podcasts were more common in respondents aged
8 over 36 years.

9 Challenges to the professional use of social media were addressed based on concern and
10 occurrence across the four content areas (**Figure 3**). Amongst them, loss of professional
11 image and copyright issues were the most concerning problems, and the most frequently
12 occurring problems were loss of professional image, and financial interests or conflicts.
13 The majority of respondents (87.3%, n=110) indicated they had taken efforts to
14 minimise problems associated with unprofessional online behaviours.

15 With regard to the main barriers to using social media for professional purposes, the
16 most common responses was not know where to start (18.6%, n=52), and a lack of time
17 (18.6%, n=52). Another common barrier was a lack of necessity in using social media in
18 a professional capacity. Of users, 29 respondents indicated that social media did not
19 provide additional benefits compared to traditional tools, and 15 respondents stated that
20 they did not see it as a requirement for work.

21 The highest perceived benefits were seen in communicating internationally or remotely
22 (mean \pm SD; 1.3 ± 0.1), keeping abreast of current information (1.3 ± 0.1), followed by
23 disseminating health messages (1.1 ± 0.1). On the contrary, delivery of health care was

1 ranked lowest (0.3 ± 0.1) followed by greater esteem through higher visibility (0.6 ± 0.1)
2 and attracting potential clients (0.6 ± 0.1).

3 Network visualisations using NodeXL were created for US data from the 'Dietitians'
4 network, with three clusters clearly shown based on the connection between users and
5 opacity based on degree centrality (**Figure 4**). From the metrics for user connections, it
6 was found that user A had a degree centrality of 114, betweenness centrality of 41.729,
7 closeness centrality of 0.002 and eigenvector centrality of 0.003. User B, in the centre of
8 the upper cluster, had a degree centrality of 254, betweenness centrality of 638.02,
9 closeness centrality of 0.003 and eigenvector centrality of 0.006. One could infer from
10 these measures that user A had quicker access to other users (lower closeness centrality
11 compared to user B) whereas user B had connections to more users (higher degree
12 centrality). The higher eigenvector centrality of user B higher also demonstrated that
13 he/she is more influential as a member of the network. Furthermore, the higher
14 betweenness centrality of user B indicates that this user had an important 'bridging' role
15 of controlling information flow between otherwise unlinked constituents, possibly
16 through retweeting of information.

17 From the 'Dietitians-down-under' network, most of users are clustered in the middle of
18 the network visualisation, with a few at the edges. User A was connected to five users in
19 the larger cluster. They had degree centrality of 5, betweenness centrality of 0, closeness
20 centrality of 0.004 and eigenvector centrality of 0.001. Another user, user B, in the
21 middle of the network, had degree centrality of 227, betweenness centrality of 2202,
22 closeness centrality of 0.008 and eigenvector centrality of 0.017 which can be seen by
23 their location in the cluster demonstrating more influence. The high betweenness

1 centrality for this user also demonstrates a stronger ‘bridging’ role by comparison with
2 user A in the US data.

3

4 **Discussion**

5 The results of this study demonstrate that approximately one third of respondents used
6 social media in a professional capacity. Although it is expected that social media has
7 become more widespread and will continue to increase over time. The Pearson’s Chi
8 Square analyses in the present study did not support the commonly raised theory that
9 older age groups are associated with late adoption and the reason for some health
10 professionals being slow to adopt social media.¹⁹ It can be postulated from this study
11 that the user need i.e. the work setting, had greater influence on the professional use of
12 social media than the age of the respondents. The survey was not sampled to create a
13 representative response and outcomes should be interpreted with caution. While early
14 adopter members are more likely to utilise social media as a form of communication a
15 similar pattern has also been seen as other technologies were introduced.²⁰
16 The popularity of using social networking sites in a personal capacity echoes the
17 findings of an early survey of the Dietitians Association of Australia (DAA),²¹ in which
18 77.7% respondents reported using social networking sites in a personal capacity.
19 However, the use of social networking sites for professional purposes was found to be
20 much lower. For dietitians who are interested in exploring the professional use of social
21 media, a first step could be the management of clear communication messages via
22 Twitter which is limited by character use. This can maintain a dietitian’s professional
23 image and also have impact within the profession via network connections.⁴

1 In terms of professional use of social media, the use of Twitter as part of a dietitian's
2 work appears to be growing in popularity.²¹ This may indicate that Twitter has made an
3 impact on the field of dietetics. Twitter was also found to be used regularly among the
4 dietitians who already use it, which suggests the potential of using this platform in a
5 variety of settings. Twitter can be used to gather information about a certain
6 events/conference or health topics²² and has been proven to be effective in encouraging
7 lifestyle changes²³ through 'chatter' about daily activities.²⁴ For organisations, Twitter
8 can be used as a channel to support other activities or to provide reliable information.
9 For example, the Centers for Disease Control and Prevention Twitter handle
10 @CDCemergency was used to combat misinformation and saw a large increase of
11 followers during the outbreak of Influenza AH1N1²⁵ given that people use Twitter to
12 talk about daily activities.

13 When the results of this study were compared to a survey conducted with British
14 dietitians a decade ago,¹³ the finding that social media platforms are important tools
15 used to receive information is still dominant form of use. The literature has
16 demonstrated the success of social media as a social marketing tool²⁶ and a healthcare
17 delivery mode in intervention studies,²⁷ though this study found that the benefits
18 associated with actively reaching out to audiences were ranked lower for social media
19 users. The purpose of using social media in dietetics may be more closely related to
20 dissemination of research findings particularly for professional development and,
21 therefore, more closely related to the British survey findings. On the other hand, the
22 success of social media in research settings may not translate to dietetic practice in other
23 settings where resources are limited and dissemination protocols are less clear.

1 Using social media to promote business comes with both benefits and risks, which can
2 be highly variable among individuals. To date, there is no data available assessing the
3 effectiveness of using social media in dietetic practice. Such data would be useful to
4 shed light on how dietitians can use social media to their advantage.

5 The results of this study revealed that the majority of respondents were aware of online
6 professionalism, yet some respondents indicated that they were never concerned with its
7 problems. Blurred boundaries between personal and professional use of social media
8 may cause loss of trust from patients/clients or even legal action in health care system.²⁸

9 DAA and the Academy of Nutrition and Dietetics have developed guidance for the
10 maintenance of a professional presence on social media,^{29, 30} addressing potential risks
11 of privacy violation, antitrust, defamation, content context and copyright issues.^{10, 31}

12 These endeavours from professional organisations can contribute to awareness of e-
13 professionalism. It is also noteworthy that the measurement of e-professionalism is
14 subjective in the present study, and little has been reported on the prevalence or on cases
15 of 'unprofessionalism' amongst dietitians. Further, the members sampled were current
16 users of social media while those with barrier to use including e-professionalism are less
17 likely to have responded to the survey. This may warrant a future study as well as
18 continuing efforts for awareness-raising.

19 The investigation of perceived barriers has its implications on the design of educational
20 resources. Similar to the present study, a survey of other health professionals in
21 Australia³² also found limited knowledge of the practical application of social media as
22 the main reason for resistance to adopt social media. It is, therefore recommended that
23 educational strategies be created to upskill dietitians in the application of social media,
24 particularly in time management and technical issues. Such strategies have been

1 implemented in Australia via workshops at DAA national conferences though no formal
2 impact evaluation has been reported. To address the perception of social media being
3 redundant, resources incorporating a needs assessment tool should be developed in
4 collaboration with influential dietitians who adopt social media.

5 The NodeXL social media metric tool was found to be successful to demonstrate impact
6 within two social media networks for dietetics. Influential users were identified though
7 both were seen as holding a bridging role between sourcing and disseminating new
8 information, likely via retweeting of posts. Although rate limited to 1000 users per hour
9 when user information is extracted from Twitter, NodeXL may have a role in the
10 successful dissemination of health information by identifying those individual of
11 significance in social media platforms. Taking the public list 'Dietitians' as an example,
12 if the purpose was to broadcast a message, user A has the ability to spread information
13 in short time; while user B is able to reach large audience of users who are otherwise
14 unlinked, as well as influential individuals. Metrics visualised on graphs enable the
15 presentation of the overall network and individual characteristics at the same time. Such
16 tools may help dietitians effectively spread quality information online via targeted
17 Twitter users. This is increasingly important approach considering the role of the
18 Internet as a main source of health information for the public³³ and the large volume of
19 misinformation that is available.³⁴

20 Overall, NodeXL was used to demonstrate not only how information spreads through
21 the network at the macro level, but also how a user's position in a social network may
22 affect access to resources at the micro level.¹⁷ However, it is an analytical tool originally
23 designed for marketing purposes and therefore, suggested that dietitians and other
24 health professionals work with the metrics that suit their needs.

1 The low response rate of the survey (7% based on the number of DAA members at the
2 time of data collection) is a potential limitation of the presented research despite the
3 gender balance being similar between the survey (3%) and membership overall. Further,
4 a unified definition and examples of social media at the start of the survey could have
5 increased responses and supported participants to complete the survey, considering
6 social media is an area that many of dietitians were not familiar with.

7

8 **Conclusion**

9 To the authors knowledge, this is the first study investigating the use of social media
10 among Australian dietitians in a professional capacity via both a subjective survey and
11 objective metric analysis. The survey showed a low level of engagement in the
12 professional use of social media among Australian dietitians. The results demonstrate
13 the opportunities for dietitians as well as need for future research in evaluating its use in
14 practice. The use of NodeXL identified significant individuals in a network of Twitter
15 social media users. Regular monitoring of dietitians social media use is required over
16 time as new platforms become available, likely to impact on the network clusters found
17 in this study. Engagement of influential users to upskill new users is a potential strategy
18 for encouraging increased use.

19

20

1 Reference:

- 2 1. Gardiner R, editor. The transition from 'informed patient' care to 'patient informed'
3 care 2008; Netherlands.
- 4 2. Kohr Z, Marsh P. *Life Online: The Web in 2020. A study by the Social Issue Research*
5 *Centre on behalf of Rackspace Managed Hosting*. Oxford OK: The Social Issues Research
6 Centre2006.
- 7 3. Seeman N. Web 2.0 and chronic illness: new horizons, new opportunities. *Healthcare*
8 *quarterly (Toronto, Ont)*. 2008;11(1):104-4.
- 9 4. Duggan M EN, Lampe C, Lenhart A, Madden M. Social Media Update 2014.
10 Washington, DC, US: Pew Research Center; 2015.
- 11 5. Burton S, Freeman J. Marketing the dietetics profession to consumers and
12 stakeholders: a social and professional imperative. *Nutrition & Dietetics*. 2005;62(4):158-60.
- 13 6. Hamm MP, Chisholm A, Shulhan J, et al. Social Media Use by Health Care Professionals
14 and Trainees: A Scoping Review. *Academic Medicine*. 2013;88(9):1376-83.
- 15 7. Moorhead SA, Hazlett DE, Harrison L, et al. A new dimension of health care: Systematic
16 review of the uses, benefits, and limitations of social media for health communication. *Journal*
17 *of Medical Internet Research*. 2013;15(4):e85.
- 18 8. Kaczmarczyk JM, Chuang A, Dugoff L, et al. e-Professionalism: a new frontier in medical
19 education. *Teach Learn Med*. 2013;25(2):165-70.
- 20 9. Greysen SR, Kind T, Chretien KC. Online professionalism and the mirror of social media.
21 *Journal of General Internal Medicine*. 2010;25(11):1227-9.
- 22 10. Ayres EJ. The Impact of Social Media on Business and Ethical Practices in Dietetics.
23 *Journal of the Academy of Nutrition and Dietetics*. 2013;113(11):1539-43.
- 24 11. Helm J, Jones RM. Practice Paper of the Academy of Nutrition and Dietetics: Social
25 Media and the Dietetics Practitioner: Opportunities, Challenges, and Best Practices. *Journal of*
26 *the Academy of Nutrition and Dietetics*. 2016;116(11):1825-35.
- 27 12. Vaterlaus JM, Patten EV, Roche C, Young JA. #Gettinghealthy: The perceived influence
28 of social media on young adult health behaviors. *Computers in Human Behavior*. 2015;45:151-
29 7.
- 30 13. Kirk SFL, Cade JE, Greenhalgh A. Dietitians and the internet: are dietitians embracing
31 the new technology? *Journal of Human Nutrition and Dietetics*. 2001;14(6):477-84.
- 32 14. Neiger BL, Thackeray R, Van Wagenen SA, et al. Use of Social Media in Health
33 Promotion: Purposes, Key Performance Indicators, and Evaluation Metrics. *Health Promotion*
34 *Practice*. 2012;13(2):159-64.
- 35 15. Sousa D, Sarmiento L, Rodrigues EM. Characterization of the twitter @replies network:
36 Are user ties social or topical? 2010. p. 63-70.
- 37 16. Eysenbach G. Improving the Quality of Web Surveys: The Checklist for Reporting
38 Results of Internet E-Surveys (CHERRIES). *J Med Internet Res*. 2004;6(3):e34.
- 39 17. Hansen D, Shneiderman B, Smith MA. *Analyzing Social Media Networks with NodeXL*:
40 Morgan Kaufmann; 2010.
- 41 18. Erlingsson C, Brysiewicz P. A hands-on guide to doing content analysis. *African Journal*
42 *of Emergency Medicine*. 2017;7(3):93-9.
- 43 19. Masters K. For what purpose and reasons do doctors use the Internet: A systematic
44 review. *International journal of medical informatics*. 2008;77(1):4-16.
- 45 20. Kirsty M, Peter W, Karen W, et al. Introduction to nutrition informatics in Australia.
46 *Nutrition & Dietetics*. 2014;71(4):289-94.
- 47 21. Dietitians Association of Australia. Social media use. 2011.

- 1 22. Terry M. Twittering healthcare: Social media and medicine. *Telemedicine and e-Health*.
2 2009;15(6):507-10.
- 3 23. Young MM. Twitter Me: Using Micro-blogging to Motivate Teenagers to Exercise.
4 Berlin, Heidelberg: Springer Berlin Heidelberg; 2010. p. 439-48.
- 5 24. Java A, Song X, Finin T, Tseng B. Why we twitter: Understanding microblogging usage
6 and communities. 2007. p. 56-65.
- 7 25. Signorini A, Segre AM, Polgreen PM. The use of Twitter to track levels of disease
8 activity and public concern in the U.S. during the influenza A H1N1 pandemic. *PLoS ONE*.
9 2011;6(5):e19467.
- 10 26. Thackeray R, Neiger BL, Hanson CL, McKenzie JF. Enhancing Promotional Strategies
11 Within Social Marketing Programs: Use of Web 2.0 Social Media. *Health Promotion Practice*.
12 2008;9(4):338-43.
- 13 27. Wantland DJ, Portillo CJ, Holzemer WL, Slaughter R, McGhee EM. The effectiveness of
14 Web-based vs. non-Web-based interventions: A meta-analysis of behavioral change outcomes.
15 *Journal Of Medical Internet Research*. 2004;6(4):67-84.
- 16 28. Fox M. Legal Risks of Social Media: What Dietetics Practitioners Need to Know. *Journal*
17 *of the Academy of Nutrition and Dietetics*. 2012;112(11):1718-.
- 18 29. Stirling E SC, Nicholson Z, Diversi T, Johnston S, Simpson L, et al. . Social Media: Dialling
19 into Digital Age. 2011; Available from: <https://www.pennutrition.com/enews.aspx?id=12#144>.
- 20 30. Academy of Nutrition and Dietetics. Social Media Policy. 2015; Available from:
21 [http://www.eatrightpro.org/resource/leadership/board-of-directors/academy-policies/social-](http://www.eatrightpro.org/resource/leadership/board-of-directors/academy-policies/social-media-policy#.VAIBgPmSwbl)
22 [media-policy#.VAIBgPmSwbl](http://www.eatrightpro.org/resource/leadership/board-of-directors/academy-policies/social-media-policy#.VAIBgPmSwbl).
- 23 31. Helm J. Ethical and Legal Issues Related to Blogging and Social Media. *Journal of the*
24 *Academy of Nutrition and Dietetics*. 2013;113(5):688.
- 25 32. Usher WT. Australian health professionals' social media (Web 2.0) adoption trends:
26 early 21st century health care delivery and practice promotion. *Australian Journal of Primary*
27 *Health*. 2012;18(1):31-41.
- 28 33. Kummervold PE, Chronaki CE, Lausen B, et al. eHealth trends in Europe 2005-2007: A
29 population-based survey. *Journal of Medical Internet Research*. 2008;10(4):e42.
- 30 34. Sa E-R, Kuss O, Eysenbach G, Powell J. Empirical Studies Assessing the Quality of Health
31 Information for Consumers on the World Wide Web: A Systematic Review. *JAMA*.
32 2002;287(20):2691-700.







