1-1-2020

Audit of the national meal guidelines for home-delivered and centre-based meal programs

Alice Kemp
University of Wollongong

Karen L. Walton
University of Wollongong, kwalton@uow.edu.au

Vinicius do Rosario
University of Wollongong, vadr998@uowmail.edu.au

Karen E. Charlton
University of Wollongong, karenc@uow.edu.au

Anne T. McMahon
University of Wollongong, amcmahon@uow.edu.au

Audit of the national meal guidelines for home-delivered and centre-based meal programs

Abstract

Objective To evaluate the impact of the National Meal Guidelines on service providers and caterers involved in home-delivered and centre-based meal programs in Australia. Methods An anonymous online survey was conducted to explore the uptake of the guidelines by participants and evaluate the impact on their practice. Closed questions were analysed using $\chi 2$ and Fisher's exact tests, while open-ended questions underwent thematic analysis to identify key themes. Results A total of 101 out of 441 participants completed the survey (response rate of 23.0%). Most participants (69%) were currently referring to the guidelines, particularly for nutrition guidelines, menu planning and auditing tools. Key barriers to implementation were cost, supplier compliance issues and lack of staff education. Conclusions The National Meal Guidelines have been successfully implemented in many services around Australia. Further research should investigate their impact on customer satisfaction and external supplier compliance.

Keywords

home-delivered, centre-based, guidelines, programs, audit, meal, national

Publication Details

Kemp, A., Walton, K., do Rosario, V., Charlton, K. & McMahon, A. (2020). Audit of the national meal guidelines for home-delivered and centre-based meal programs. Australasian Journal on Ageing, Online First

Audit of the National Meal Guidelines for Home Delivered and Centre Based Meal Programs

Abstract

Objective: Evaluate the impact of the National Meal Guidelines on service providers and caterers involved with home delivered and centre based meal programs in Australia.

Methods: An anonymous online survey was conducted to explore the uptake of the guidelines by participants and evaluate the impact on their practice. Closed questions were analysed using Chi-square and Fisher's Exact tests, while open-ended questions underwent thematic analysis to identify key themes.

Results: A total of 101 out of 441 participants completed the survey (response rate of 23.0%). Most participants (69%) were currently referring to the guidelines, particularly for nutrition guidelines, menu planning and auditing tools. Key barriers to implementation were cost, supplier compliance issues and lack of staff education.

Conclusions: The National Meal Guidelines have been successfully implemented in many services around Australia. Further research should investigate their impact on customer satisfaction and external supplier compliance.

Key words: Food Service, Meals on Wheels, Nutrition Guidelines, Health Services for Aged, Health Care Quality

Introduction

Protein energy malnutrition is defined as the unintentional loss of lean tissue caused by inadequate energy, protein and nutrient intake[1]. Currently, it is estimated that 10-30% of older

Australians living in the community are malnourished[2]. Malnutrition is associated with significant costs to the healthcare system due to increased hospital admissions, poor recovery times and prolonged hospital admissions[3]. In England, malnutrition is estimated to cost the country over £19.6 billion per year[4].

Meal delivery programs, such as those provided by Meals on Wheels, have been shown to be an effective way to improve the nutritional status and independence of older adults[5]. Meals on Wheels and similar services provide older adults with nourishing meals and regular social interaction which can help improve their overall nutrition status[6]. The benefits of meal programs go beyond the individual as they also assist in reducing the impact of the older population on health services[7].

In Australia, Meals on Wheels has been providing older adults with nourishing meals and social interaction since 1952[8]. Through its 78 700 volunteers, Meals on Wheels have been able to deliver over 14.8 million meals a year to approximately 53 000 customers across the country[6,8]. Over the past sixty years, the services and meal choices provided by Meals on Wheels have changed to reflect the changing demographics of the Australian population[8]. Many services now offer a variety of cuisines, convenient frozen meals, breakfast items and group meals to help support the independence and wellbeing of older Australians[8]. The guidelines which support these organisations have also changed as new evidence has emerged and methods of best practice have been adapted. The first nutrition standards for home delivered meal programs were released in 1977 by the Commonwealth Department of Health[9]. From there, state-based guidelines were released in the early 2000s, but these documents varied significantly between states and some lacked specific nutrition recommendations[10]. These inconsistencies highlighted a need for a national set of guidelines to support meal programs in delivering their essential services[10].

Acknowledging the benefits of home-based interventions, such as Meals on Wheels, the Australian Government launched the Commonwealth Home Support Programme (CHSP) in 2015[11]. The CHSP helps supports older adults in maintaining their independence at home through

the subsidy of basic support services such as meal deliveries[12]. In 2016, the CHSP funded the development of the National Meal Guidelines for home delivered and centre based meal programs to provide services with evidence-based nutrition guidelines[13]. The development of the National Meal Guidelines was an extensive process that involved a systematic literature review[14], six face-to-face workshops with key stakeholders and two surveys with MOW customers, service providers, caterers and health professionals[9]. As part of the development of the National Meal Guidelines, Clancy et al[11] surveyed 289 service providers and health professionals to ascertain their views and suggestions regarding the Guidelines. The resulting document was considered a "landmark document"[13] that provided community-based meal programs with the information and tools they required to create adequate and nourishing menus for older adults[13].

The aim of this study was to evaluate the impact of the National Meal Guidelines on the practice of service providers and caterers who are involved with home delivered and centre based meal programs. As part of the evaluation process, an online survey of service providers and caterers was conducted. The results from this survey will be used to understand current practices of meal programs in Australia and help shape future versions of the National Meal Guidelines.

Methods

Participants

Criteria for joining the study were that participants (service providers and caterers) were over the age of 18 years and were involved in home delivered or centre based meal programs in Australia. Four hundred and twenty-eight participants affiliated with Meals on Wheels were invited via email to take part in the online survey. Additionally, 13 service providers from across Australia, who were not affiliated with Meals on Wheels, were also invited via email to participate in the survey. They were identified through a Google search as providing home delivered meal service to older Australians and were contacted via email. Their inclusion provided a broader understanding of the use of the Guidelines by other organisations involved in home delivered and centre based meal programs in Australia.

Survey

Between June and August 2018, participants were asked to complete an online survey via Survey Monkey (Survey Monkey Inc., San Mateo, California). An email reminder was sent to potential participants four weeks after the initial email contact. Participation in the survey was voluntary and anonymous. The survey contained 47 questions and took approximately twenty minutes to complete. The questions in the survey related to key topics from the National Meal Guidelines including knowledge about risk factors for malnutrition, malnutrition screening, fortification and menu planning. Demographics and details about the services were established using closed multiple-choice questions while open-ended questions allowed participants to elaborate on the benefits, changes, concerns and barriers they had experienced while implementing the Guidelines. Ethics approval was obtained from the ***Blinded for peer review*** Human Research Ethics Committee ***Blinded for peer review*** and consent was implied by the completion of the survey.

Data Analysis

Health Service Evaluation often uses the Plan, Do, Study, Act continuous quality improvement framework to review change. This study used this approach to review how services had viewed the National Meal Guidelines, how they compared, what changes had already resulted in practice, and what they were still to act on[15].

Categorical data from the closed questions were analysed using Chi-square and Fisher's Exact tests. Analyses were conducted in the Statistical Package for the Social Sciences (SPSS V23 2015, IBM Corp, Chicago II, USA).

Open-ended responses were systematically examined and coded following a conventional content analysis, with codes derived from the data[16]. The data was coded into categories based on key concepts for each question such as 'Changed Menu', 'Supplier Compliance' or 'Auditing

Tools'. The codes were used to identify key themes and elaborate on the responses provided in the closed questions[17]. This provided both broader understanding for the closed responses, as well as discussion and contrast of the impact of the National Meal Guidelines on the practice of service providers and caterers.

Results

A total of 101 participants completed the survey (Table 1) which reflected a response rate of approximately 23% (n = 101/441). The majority of participants were female (85%), located in New South Wales (62%) and were affiliated with Meals on Wheels (90%). The services most commonly provided home delivered meals (56%) and used an external supplier to source their meals (60%) (Table 2). Overall, 89% of participants had heard of the National Meal Guidelines and 69% were currently adhering to them. There was no significant association found between services using the guidelines and their location (X^2 (2, N=96) = 1.31, p=0.52), type of service (X^2 (2, N=96) = 1.67, p=0.435) or affiliation with Meals on Wheels (p=0.50, Fisher's Exact Test).

Of the 31% of services that were not using the National Meal Guidelines, 86% were associated with Meals on Wheels (29% of all MOW participants) and many were from small country towns (43%). The majority of this cohort had heard of the guidelines (65%) but there were a variety of reasons for not implementing them. The most significant comment was that services were unsure how to, or considered it too difficult, to implement the Guidelines. Some participants also commented that implementing the guidelines was too costly.

Within the cohort who were using the guidelines, 69% reported no changes to their services as a consequence of the National Meal Guidelines. Of those that had made changes, most involved were modifying the menu, changing to suppliers who were using the guidelines and introducing new practices such as fortification and malnutrition screening. Changes to the menu included improving the nutrition quality of the foods provided (reduced salt and sugar), increasing protein serve size and increasing the number of meal options provided (Table 3). Almost all services (98%) catered for special diets with the most common being diabetes, texture modified,

Table 1: Demographics of participants (n=101)

Demographic	Total (N)	N (%)
Gender	101	
Female		86 (85)
Male		13 (13)
Prefer Not to Answer		2 (2)
Region	101	
Major City		35 (35)
Large Country Town		27 (27)
Small Country Town		39 (38)
State	101	
Australian Capital Territory		1 (1)
New South Wales		63 (62)
Northern Territory		0 (0)
Queensland		7 (7)
South Australia		2 (2)
Tasmania		2 (2)
Victoria		16 (16)
Western Australia		10 (10)
Affiliation	101	
Meals on Wheels		91 (90)
Non-Meals on Wheels		10 (10)

vegetarian and gluten free. Most of the services did not require a medical or dietetics referral for a special diet (82%) or speech pathologist referral for a texture modified diet (77%).

Almost all participants (98%) were aware of the protein and energy requirements set out in the National Meal Guidelines but only half of the participants were confident that their meals met the guidelines (56%). Methods of assessing protein and energy content in meals varied with most services using a dietitian or nutrient calculator to assess adequacy. The majority of services used standard recipes for their meals (85%). A significant association between the use of standard

Table 2: Characteristics of meal services (n=101)

Characteristics	Total (N)	N (%)
Service Type	101	
Home Delivered		57(56)
Centre-Based		2(2)
Both		42 (42)
Food Service System	65	
Cook Fresh		15(23)
Cook Chill		9 (14)
Cook Freeze		9 (14)
Combination		32 (49)
Food Preparation	65	
External Supplier		39 (60)
In House Preparation		17 (26)
Both		7 (11)
Other		2 (3)

recipes and meeting the protein and energy requirements was observed (p=0.036, Fisher's Exact Test).

Half of the services (50%) were currently screening their clients for malnutrition with 26% introducing this practice in response to the National Meal Guidelines. Methods of malnutrition screening varied with some services using a formal tool such as the Malnutrition Screening Tool (MST) while other services referred to a doctor or dietitian if poor intake was suspected[6]. Fortification of meals was less common with only 31% services providing enriched meals and 18% of services introducing this practice as a result of implementing the National Meal Guidelines.

Overall, two thirds (67%) of participants had no concerns when it came to implementing the National Meal Guidelines. Despite cost being stated as one of the main concerns for services implementing the guidelines, only 14% of participants experienced an increase in cost after implementing the guidelines whilst the remaining 86% of participants experienced no change in cost. Increases in cost were attributed to increased supplier prices, increased stock to offer more choices and increased protein serves. Within the cohort that experienced cost increases, 92% of

Table 3: Changes to foods choices provided

Food Choices	Total (N)	N (%)
Soup	50	
More Choices		2(2)
No Change		46(92)
Less Choices		2(2)
Main Meal	61	
More Choices		10(16)
No Change		51(84)
Less Choices		0(0)
Small Meal	26	
More Choices		2(8)
No Change		24(92)
Less Choices		0(0)
Sandwich	24	
More Choices		2(8)
No Change		22(92)
Less Choices		0 (0)
Snack	8	
More Choices		0(0)
No Change		8(100)
Less Choices		0(0)
Dessert	57	
More Choices		6(11)
No Change		51(89)
Less Choices		0(0)

them passed it onto their customers with one service in Western Australia reporting an increase in main meal pricing from $8 to $9. No significant difference was found between changes made due to the National Meal Guidelines and increased cost, p=1.00 (Fisher's Exact Test). The other major concern expressed by participants was supplier compliance. Many services reported difficulty finding suppliers who were meeting the guidelines or who were willing to adapt their menus to the National Meal Guidelines.

As well as cost and supplier compliance, the other perceived barrier for services was a lack of skills and confidence to implement the guidelines. Although all participants (100%) were happy with the current format of the guidelines, only 52% described them as easy to understand and only 42% found the guidelines easy to implement. Many participants indicated a desire for further staff education regarding implementing the guidelines with one participant stating, *"I would love to work with MOW to skill up our sector in doing this."* Other participants indicated that they would find it easier to implement the guidelines if an online recipe portal was also available.

Overall, almost all participants (98%) were satisfied with the information provided in the guidelines. Many services reported that the guidelines had enhanced their services through improved menu quality and staff knowledge. The most useful aspects of the guidelines were reported to be the nutrition guidelines, the menu auditing tools, and the menu planning tools. Numerous services have also reported using the guidelines as a way to promote and strengthen their services with one service reporting an increase in inquiries and new customers since implementing the guidelines. The benefits of the guidelines have especially been seen in rural areas with one participant describing the guidelines as *"a resourceful document especially for areas that are remote and do not always have the services of a dietitian available."*

Discussion

There were several priority areas identified for inclusion during the development of guidelines, including optimising intakes through mid-meal snacks and fortification, menu variety and malnutrition screening[11]. These areas were highlighted in the final guidelines as it is known that older adults are particularly susceptible to the impact of diet[18] and that improving nutritional status can have significant benefits in terms of reduced morbidity and premature mortality in this population[19].

Services have reported utilising the menu planning and auditing tools to enhance their menus. Some services focused on improving menu variety, which has been shown to be a useful strategy to increase oral intake in older adults with reduced appetite Other services focused on optimising the nutritional quality of the meals by increasing the size of protein serves and reducing the salt content of meals.

The provision of fortified meals and nourishing mid meal snacks have also been identified as key strategies for improving the nutrition status of older adults especially those who are malnourished[6,11,19]. Like Clancy et al[11], the results from this survey indicated that there was limited use of nourishing mid meal snacks and fortified meals amongst the meal providers. However, there has been a moderate increase in the number services providing fortified meals as a consequence of implementing the National Meal Guidelines. The results suggest that where services obtain their meals may contribute to their ability to provide fortified meals for their customers, with services that rely on external suppliers being the most unlikely to enrich meals.

Malnutrition screening was also identified as a key priority area for the National Meal Guidelines due to the risk of malnutrition in community living older adults[2,11]. The results of this survey indicated that just over half the services screened their customers for malnutrition, with a quarter of this cohort implementing the practice as a consequence of the National Meal Guidelines. As with Clancy et al[11] the methods for screening customers varied between services with only a small number of services utilising the MST screening tool that was provided in the guidelines. The

reality of the current funding model and the resources required to train staff and volunteers could potentially be contributing to the slow uptake of these important tools[11].

During the development of the guidelines, key stakeholders were given the opportunity to express their concerns regarding the implementation of the guidelines[9,11]. Stakeholders expressed concerns regarding the difficulties of meeting the guidelines especially in small or rural areas. They also identified perceived increased cost, supplier compliance, customer acceptance as well as staff engagement as potential barriers for implementing the guidelines[11]. The results of the current survey elaborate on the reality of the situation across Australia. Only a third of participants from rural areas were not currently referring to the guidelines, with the majority of rural services engaging with the guidelines and utilising the information they provide. Meal programs in rural communities often don't have a local dietitian due to the difficulties of recruiting and retaining dietitians in these areas[20] and, as such, the guidelines have been identified as a vital source of information and guidance for these services.

The implementation of evidence-based guidelines in non-government organisations is often limited by barriers such as cost and staffing[21].Although the impact of increased costs was not as significant as anticipated by stakeholders, perceived cost was one of the main reasons that services chose not to engage with the guidelines. The main source of increased costs came from suppliers who cited compliance to the National Meal Guidelines as the reason for price increases. Furthermore, many services reported having to change suppliers as their original supplier were either unable or unwilling to comply with the guidelines.

It is a promising finding that the guidelines were considered a useful and informative resource, but many participants also wanted more practical training and resources to assist with implementation of advice provided in the guidelines. These results suggest that in-service training regarding nutrition guidelines, menu auditing and meal planning would be well received and beneficial to many service providers. Additionally, results suggest that access to a future recipe portal would be helpful in improving engagement of both service providers and caterers.

Limitations of this study include the relatively low response rate for the survey which increases the potential for non-response bias[22]. Several actions were taken to reduce this bias such as making the survey anonymous, extending the data collection period and sending follow-up reminder emails. However, research has shown there is not a direct correlation between response rate and validity and other factors such as response representativeness should be considered[22,23]. Overall, the participant cohort was reflective of the current situation of meal programs in Australia with the majority of respondents being affiliated with Meals on Wheels, the major meal program supplier in Australia. The survey had nationwide participation, with the exception of the Northern Territory. New South Wales and Queensland services were over-represented and under-represented, respectively.

Conclusion

This study supports that the National Meal Guidelines have been successful at achieving their aim of providing consistent nutritional advice. Approximately two-thirds of Commonwealth Home Support Programme meal delivery services, mostly from New South Wales, Victoria and Western Australia, evaluated in this study are adhering to the guidelines. Key barriers were perceived increased cost, supplier compliance issues and low staff engagement. Staff training and access to practical resources, such as a recipe portal, were suggested as possible ways to increase engagement. Fortification and malnutrition screening were identified as areas of growth for community-based services. Relevant topics to be explored in future research are customer satisfaction, wholesale suppliers' engagement with the guidelines and the associated costs of implementation, and the practicalities of obtaining fortified meals for community-based meal programs.

Policy Impact Statement

Implementation of the National Meal Guidelines provides an important and timely opportunity to adopt a consistent approach to enhancing the nutrition, taste, variety and presentation of meals provided to older adults. They include important recommendations about meals and nutrition, and as such should be the central point for menu planning and review, tender specifications and the consideration of new products and recipes.

Practice Impact Statement

Evaluation of the uptake and utilisation of the National Meal Guidelines indicates that service providers find them a useful and supportive document that improved their confidence and knowledge of home delivered and centre based meal programs. Key barriers to implementing the nutritional guidelines were identified as perceived increased cost, compliance issues by suppliers and lack of staff engagement. Staff training and access to practical resources, such as a recipe portal, were suggested as possible ways to increase engagement.

References

1. Marshall S. Why Is the Skeleton Still in the Hospital Closet? A Look at the Complex Aetiology of Protein-Energy Malnutrition and Its Implications for the Nutrition Care Team. J Nutr Health Aging. 2018 Jan;22(1):26–9.
2. Watterson C, Fraser A, Banks M, Isenring E, Miller M, Silvester C, et al. Evidence based practice guidelines for the nutritional management of malnutrition in adult patients across the continuum of care. Nutr Diet. 2009 Dec;66 Suppl 3:S1-34.
3. Weekes CE, Spiro A, Baldwin C, Whelan K, Thomas JE, Parkin D, et al. A review of the evidence for the impact of improving nutritional care on nutritional and clinical outcomes and cost. J Hum Nutr Diet. 2009 Aug;22(4):324–35.

4. Elia M. The cost of malnutrition in England and potential cost savings from nutritional interventions [Internet]. Southampton: National Institute for Health Research; 2015 [cited 2018 Oct 15]. Available from: https://www.bapen.org.uk/pdfs/economic-report-full.pdf. Joint publication with Malnutrition Action Group of the British Association for Parenteral and Enteral Nutrition.
5. Wright L, Vance L, Sudduth C, Epps JB. The Impact of a Home-Delivered Meal Program on Nutritional Risk, Dietary Intake, Food Security, Loneliness, and Social Well-Being. J Nutr Gerontol Geriatr. 2015 Jun;34(2):218–27.
6. Walton K, Charlton KE, Manning F, McMahon AT, Galea S, Evans K. The nutritional status and energy and protein intakes of MOW clients and the need for further targeted strategies to enhance intakes. Appetite. 2015 Dec;95(1):528–32.
7. Thomas KS, Mor V. Providing more home-delivered meals is one way to keep older adults with low care needs out of nursing homes. Health Aff. 2013 Oct;32(10):1796–802.
8. Meals on Wheels NSW. About us [Internet]. Sydney: Meals on Wheels NSW; 2018 [updated 2018; cited 2018 Oct 12]. Available from: https://nswmealsonwheels.org.au/About/About-Us
9. Clancy A, Walton K, Charlton K, McMahon A, Williams P, Tapsell L. Development of the National Meal Guidelines for home delivered and centre based meal programs for older adults. [unpublished manuscript]. Wollongong: University of Wollongong; 2018.
10. Department of Social Services. Key directions for the Commonwealth Home Support Programme Discussion Paper [Internet]. Canberra: Department of Social Services; 2014 [cited 2018 Oct 9]. Avaliable from: https://agedcare.health.gov.au/sites/g/files/net1426/f/documents/09_2015/final_discusison_paper_20052014.pdf
11. Clancy A, Walton K, Charlton K, McMahon A, Ringland E, Williams P et al. Service providers' and health professionals' views and suggestions for the Australian National

Meal Guidelines for the Commonwealth Home Support Program. Nutr Diet. - 2019 July;76(3):290-295.

12. Department of Health. Commonwealth Home Support Programme [Internet]. Canberra: Department of Health; 2018 [updated 2018 Sep 25; cited 2018 Oct 8]. Available from: https://agedcare.health.gov.au/programs-services/commonwealth-home-support-programme/about-the-commonwealth-home-support-programme
13. Australian Meals on Wheels Association. National Meal Guidelines: A Guide for Service Providers, Caterers and Health Professionals Providing Home Delivered and Centre Based Meal Programs for Older Adults. Wollongong: Australian Meals on Wheels Association; 2016. 116p.
14. Walton K, Rosario VA do, Pettingill H, Cassimatis E, Charlton K. The impact of home-delivered meal services on the nutritional intake of community living older adults: a systematic literature review. J Hum Nutr Diet [Internet]. [cited 2019 Dec 27];n/a(n/a). Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/jhn.12690A
15. Taylor MJ, McNicholas C, Nicolay C, Darzi A, Bell D, Reed JE. Systematic review of the application of the plan–do–study–act method to improve quality in healthcare. BMJ Qual Saf. 2014;23:290–298.
16. Hsieh H, Shannon S. Three approaches the qualitative content analysis. Qual Health Res 2005; 15: 1277–88.
17. Swift JA, Tischler V. Qualitative research in nutrition and dietetics: getting started. J Hum Nutr Diet Off J Br Diet Assoc. 2010 Dec;23(6):559–66.Wijnhoven HA, van der Meij BS, Visser M. Variety within a cooked meal increases meal energy intake in older women with a poor appetite. Appetite. 2015 Dec;95(1):571–6.
18. Craven DL, Pelly FE, Isenring E, Lovell GP. Barriers and enablers to malnutrition screening of community-living older adults: a content analysis of survey data by Australian dietitians. Aust J Prim Health. 2017 May;23(2):196–201.

19. Deutz NEP, Bauer JM, Barazzoni R, Biolo G, Boirie Y, Bosy-Westphal A, et al. Protein intake and exercise for optimal muscle function with aging: recommendations from the ESPEN Expert Group. Clin Nutr ESPEN [Internet]. 2014 Dec [cited 2018 Oct 18];33(6):929–36. Available from: http://ezproxy.uow.edu.au/login?url=https://search-ebscohost-com.ezproxy.uow.edu.au/login.aspx?direct=true&db=mnh&AN=24814383&site=ehost-live doi:10.1016/j.clnu.2014.04.007
20. Brown LJ, Williams LT, Capra S. Developing dietetic positions in rural areas: what are the key lessons? Rural Remote Health [Internet]. 2012 [cited 2018 Oct 29];12(1):1923-33. Available from: http://ezproxy.uow.edu.au/login?url=https://search-ebscohost-com.ezproxy.uow.edu.au/login.aspx?direct=true&db=mnh&AN=22506812&site=ehost-live
21. Bach-Mortensen AM, Lange BCL, Montgomery P. Barriers and facilitators to implementing evidence-based interventions among third sector organisations: a systematic review. Implement Sci [Internet]. 2018 Jul 30 [cited 2018 Oct 29];13(1):103-22. Available from: http://ezproxy.uow.edu.au/login?url=https://search-ebscohost-com.ezproxy.uow.edu.au/login.aspx?direct=true&db=mnh&AN=30060744&site=ehost-live doi:10.1186/s13012-018-0789-7
22. Fincham JE. Response rates and responsiveness for surveys, standards, and the Journal. Am J Pharm Educ. 2008 Apr;72(2):43-6.
23. Morton SM, Bandara DK, Robinson EM, Carr PE. In the 21st Century, what is an acceptable response rate? Aust N Z J Public Health. 2012 Apr;36(2):106–8.