Nutrition 29 (2013) 1037–1041

Contents lists available at ScienceDirect

Nutrition

journal homepage: www.nutritionjrnl.com

Applied nutritional investigation

A feedback system to improve the quality of nutritional care

Judith M.M. Meijers R.N., Ph.D. [a,*], Ruud J.G. Halfens Ph.D. [a], Donja M. Mijnarends M.Sc. [a], Henry Mostert R.N., M.Sc. [b], Jos M.G.A. Schols M.D., Ph.D. [a,c]

[a] Department of Health Services Research, Faculty of Health, Medicine and Life Sciences, Maastricht University, Maastricht, the Netherlands
[b] Vilans, Centre of Expertise for Long-term Care, Utrecht, the Netherlands
[c] Department of General Practice, Faculty of Health, Medicine and Life Sciences, Maastricht University, Maastricht, the Netherlands

ARTICLE INFO

Article history:
Received 7 November 2012
Accepted 8 February 2013

Keywords:
Feedback system
Care homes
Nutritional care
Quality improvement

ABSTRACT

Objective: The main objective of this study was to develop a feedback system that improves the translation of malnutrition performance data from the Dutch National Prevalence Measurement of Care Problems (LPZ) into relevant evidence- and practice-based interventions in care homes.
Methods: The process consisted of two stages. The first was the development of a feedback system. Twenty-four interviews were held with health care professionals in care homes that participated in the LPZ to gain insight into needs regarding the translation of performance data into relevant improvement interventions. Subsequently, three multidisciplinary focus groups discussed how to develop a feedback system to deal with those needs. In the second stage, the feasibility of this system was evaluated via a questionnaire (N = 93) that was sent to care homes participating in LPZ.
Results: It was important that performance data be more transparent regarding which information was relevant and that insight was gained into how to improve nutritional care. To address these needs, a dashboard was developed to present performance data in a transparent way. Subsequently, a decision tree was developed that links LPZ dashboard outcomes to evidence-based nutritional interventions for care homes. Forty-seven respondents (50.5%) evaluated the new feedback system (the dashboard and the decision tree) as feasible. The content and design were perceived to be very useful. Half of the participating institutions had already started working with improvement activities.
Conclusion: The developed feedback system was evaluated as useful for improving nutritional patient care in the future. This system will also be developed for other health care settings.

Introduction

Rycroft-Malone et al. [1] asserted that improving the quality of patient care is a complex, difficult, multifactorial, and demanding process. Gaining the attention of health care professionals is a first and important step in changing their behavior, and confronting health care professionals with the results of their own professional performance is likely to be the strongest key to gaining this attention [2,3]. Another aspect is translating this attention into relevant actions. The translation of evidence (research findings) into clinical practice actions often is slow, unpredictable, and incomplete [2]. According to research evidence, less than 50% of patients receive treatment [1–4]. As a result, there is considerable interest in developing innovative and effective methods to promote the transfer of research evidence into practice and thereby ultimately improving patient care [4].

Having an adequate and intensive feedback system is an important start in translating audit (research evidence) findings related to quality of care into targets for quality improvement actions and change [5,6]. Audit and feedback together can be defined as “any summary of clinical performance of healthcare over a specified period of time,” given in written, electronic, or verbal format [5]. It seems logical that health care professionals should be encouraged to change their nutritional clinical practice when feedback indicates that their daily practice is incompatible

Judith Meijers was responsible for design, data collection, data analysis, writing of the manuscript, provision of significant advice or consultation, and approval of final manuscript. Ruud Halfens was responsible for design, provision of significant advice or consultation, and approval of final manuscript. Donja Mijnarends was responsible for data collection, data analysis, provision of significant advice or consultation, and approval of final manuscript. Henry Mostert was responsible for design, provision of significant advice or consultation, and approval of final manuscript. Jos Schols was responsible for design, provision of significant advice or consultation, and approval of final manuscript. There are no conflicts of interest to report.

* Corresponding author. Tel.: +31 43 38 81535; fax: +31 43 38 84162.
E-mail address: j.meijers@maastrichtuniversity.nl (J. M. M. Meijers).

0899-9007/$ - see front matter © 2013 Published by Elsevier Inc.
http://dx.doi.org/10.1016/j.nut.2013.02.007

with that of their peers or accepted guidelines. An adequate, feasible, and intensive feedback system might, therefore, be an important first step in promoting the translation of audit findings [3,5].

The annual Dutch National Prevalence Measurement of Care Problems (LPZ) provides internal insight into the quality of care provided by participating organizations and their peers for benchmarking reasons. To increase awareness, LPZ's annual audit results are communicated through written feedback reports at institutional and national levels (benchmark).

A 2004–2007 trend study of LPZ data focusing on longitudinal malnutrition prevalence confirmed that auditing and feedback could help reduce prevalence rates over time because they contribute to a significant decrease in those rates in hospital and home-care settings [7]. An important finding in this study was that prevalence rates in nursing homes remained stable over time; the number of previous audits (and feedback) had no influence.

In the evaluations of the annual audits and in a study by Halfens et al, care home coordinators in particular indicated that they experienced difficulties in interpreting the audit results and linking the feedback to practical, concrete structure and process quality improvement interventions [8]. Therefore, this study focuses on the development and feasibility evaluation of an innovative and comprehensive feedback system aimed at improving the translation of nutritional LPZ audit findings into adequate and evidence-based and practice-based interventions for improving nutritional care in the care home sector.

Materials and methods

The study, performed in 2011, consisted of two phases: the development of a new feedback system and the evaluation of its feasibility within the care homes participating in the LPZ audit.

Phase 1: development of a new feedback system

- Twenty-four care home professionals who participated in the annual LPZ measurement (8 nurses, 8 quality managers, and 8 boards of directors) were interviewed in semistructured interviews to gain more insight into their specific needs concerning a new feedback system. Each interview took approximately 2 h and participants were asked open questions about what data they perceived to be most important in the LPZ audit at the different levels, how those data and their needs were presented, how results were disseminated, what their responsibilities were in terms of acting on audit results, and what they believed to be possible facilitating and limiting factors in interpreting results and putting these results into action.
- Following the results of these interviews, two sessions were held in multidisciplinary focus groups (three quality managers from the care homes that participated in the LPZ audit as coordinators, one implementation expert, and two malnutrition experts) that examined how to help the institutions interpret their data correctly and which systematic steps were needed to link their nutritional data to evidence-based and practice-based improvement actions and interventions tailored to their specific needs. A third focus group meeting discussed best practices and evidence-based guidelines and interventions for care homes that could be linked to the nutritional performance data to ensure that actions are evidence-based and practice-based.

Phase 1 led to the development of a new feedback system (dashboard and decision tree) that can link nutritional performance data from the LPZ audit to tailored evidence-based and practice-based actions.

Phase 2: the evaluation of the feedback system.

The feasibility of the dashboard and decision tree were evaluated in a survey using a questionnaire that was sent to the coordinators (quality managers) of the LPZ audit of 93 care homes within 3 mo after nutritional data was collected in the annual LPZ measurement. The questionnaire was sent to the LPZ audit coordinators because they were in charge of interpreting the data and gathering a suitable team for possible quality improvement actions.

The questionnaire contained 18 questions and was divided into three parts: part 1 consisted of 6 questions about the evaluation of the dashboard (user friendliness, completeness, content, and possible improvements); part 2 was about the evaluation of the decision tree and action tables (5 questions on suitability, completeness, link with LPZ data, improvement possibilities); and part 3 (10 questions) was related to the dissemination and implementation of the new feedback system (had the organization started using the dashboard and implementing the nutritional interventions). The questionnaire included different Likert scales and open questions. The final part also included 2 questions that focused on facilitators and barriers (such as time, resources, and management support) in using the new feedback system. The questionnaire was tested in one of the focus groups for completeness and content clarity.

Statistics

The interviews were analyzed using content analysis. The quantitative data about feasibility (from the Likert scales in the questionnaire) were imported into an SPSS file for descriptive analysis.

Results

Phase 1: development of the feedback system

The 24 interviews indicated the three most important needs: 1) a more transparent and illustrative way of presenting performance data about the quality of nutritional care; 2) more support for interpreting the results in a systematic way; 3) an easier way to link LPZ results to relevant evidence-based and practice-based interventions to improve nutritional care. To respond to these needs as a first part of the new feedback system, a dashboard was developed that presents the nutritional performance data in a visual way using web-based interactive graphics. Institutions now have one overview for example, for all their prevalence data at institutional and ward levels over time compared with similar wards and institutions at an aggregated national level over time. They can use this overview for benchmarking (Fig. 1).

The first two focus group discussions led to the development of a decision tree that starts with the malnutrition prevalence rate and asks if this is high or low compared with national data, other years, or settings elsewhere in the same organization. Additionally, the characteristics of the population assessed were explored, for example, with the aim of examining whether a specifically high-risk group is involved, such as elderly people with comorbidities, a high severity of illness, and a high rate of care dependency. The tree follows the steps of the nutritional cycle (and LPZ questionnaire) and focuses on actions such as nutritional screening, assessment, prevention, treatment, monitoring, evaluation, and organizational policy with regard to the two phases (Fig. 2).

In the third focus group, evidence-based interventions and best practices that we previously selected were discussed and linked to the decision tree in the form of five action tables (Fig. 2). The interventions are relevant and tie in with the organizational needs and audit results.

The interventions consist, for example, of evidence-based guidelines and tested best practices that are presented in two national initiatives for improving quality of care: the Dutch malnutrition steering group and the Care for Better improvement program conducted by the Centre of Expertise for Long-term Care in The Netherlands (Vilans), which focused on nutritional screening and treatment, the implementation of a monitoring system (weight and intake), and mealtime ambiance [9–11].

The five action tables are

1. Risk assessment (nutritional screening and monitoring intake and weight);

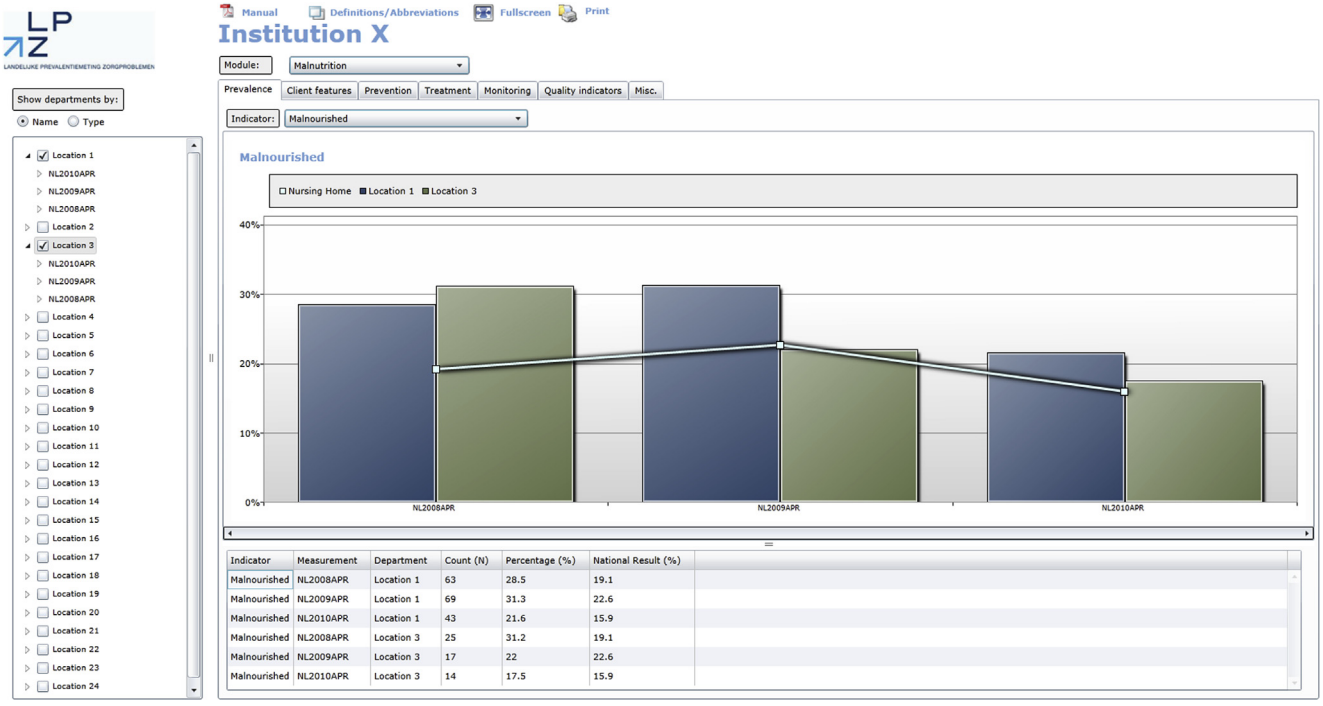

Fig. 1. The dashboard with prevalence of malnutrition of two institutions within one foundation (collaboration of institutions) from 2009 to 2012 compared with the national malnutrition prevalence. The solid line represents the national aggregated prevalence rate of malnutrition over time. Blue and grey bars represent prevalence of malnutrition over time of two institutions within a same foundation.

2. Nutritional treatment interventions;
3. Improvement of quality indicators (e.g., mealtime ambiance and guidelines);
4. Actions to improve and maintain awareness (e.g., experience being dependent on help during dinner); and
5. Tips on how to implement an improvement action.

The action tables were divided into policy actions, knowledge and insight, and methods for measuring improvement and incorporating actions into professionals' daily routine. As such, actions can be implemented at every level. For example, by implementing a weighing policy at the ward level, knowledge and insight is provided on why this is important, how to measure weight when patients are not mobile, how to record this information in a dossier, and how to make sure this knowledge is implemented into standard practice.

Phase 2: Evaluation of the feedback system

In the evaluation phase, 47 care homes (response 50.5%) evaluated the new feedback system (the dashboard and the decision tree including action tables) as feasible (100%). All participants indicated that the design of the dashboard led to an improved overview of nutrition performance data within the institution over the years and between institutions. Furthermore, it was much easier to see where improvement actions were needed. The respondents also indicated that the decision tree was helpful because it targeted the improvement process from start to finish. Additionally, the participants indicated that the implementation recommendations in the decision tree action tables helped to implement an intervention.

For example, if screening was not performed adequately, the action tables indicated which screening tools to use and how to implement them. If height cannot be measured because patients are not mobile, the tables show how to calculate this using knee height and length (centimeters) of the forearm (ulna) or the demispan.

Half of the participating institutions had already started working with improvement activities (e.g., implementing nutritional screening). For the other half of the participating group, the time frame between collecting the data and working with the decision tree (3 mo) was too short to start the improvement projects.

Factors that helped facilitate working with the new feedback system were the support of the management (66.7%), enthusiasm on the ward to work on the problem (66.7%), and clarity about responsibilities (66.7%). It was furthermore pointed out that support from the management was the most important facilitator for working with the feedback system. The lack of money and resources (both 33.3%) were indicated as barriers.

Discussion

To our knowledge, this is one of the first studies to develop and evaluate a feedback system that not only helps to interpret nutritional performance data by using a dashboard but also links these data to relevant tailored evidence-based and practice-based nutritional interventions by using a decision tree.

Having an adequate and intensive feedback system is an important start in translating LPZ audit findings about quality of care into targets for quality improvement actions and change. This study indicated that the feedback system was feasible to use. A systematic review by Mugford et al. [6] discusses and supports our conclusions that feedback of information most probably influences clinical practice if it is part of an overall strategy that

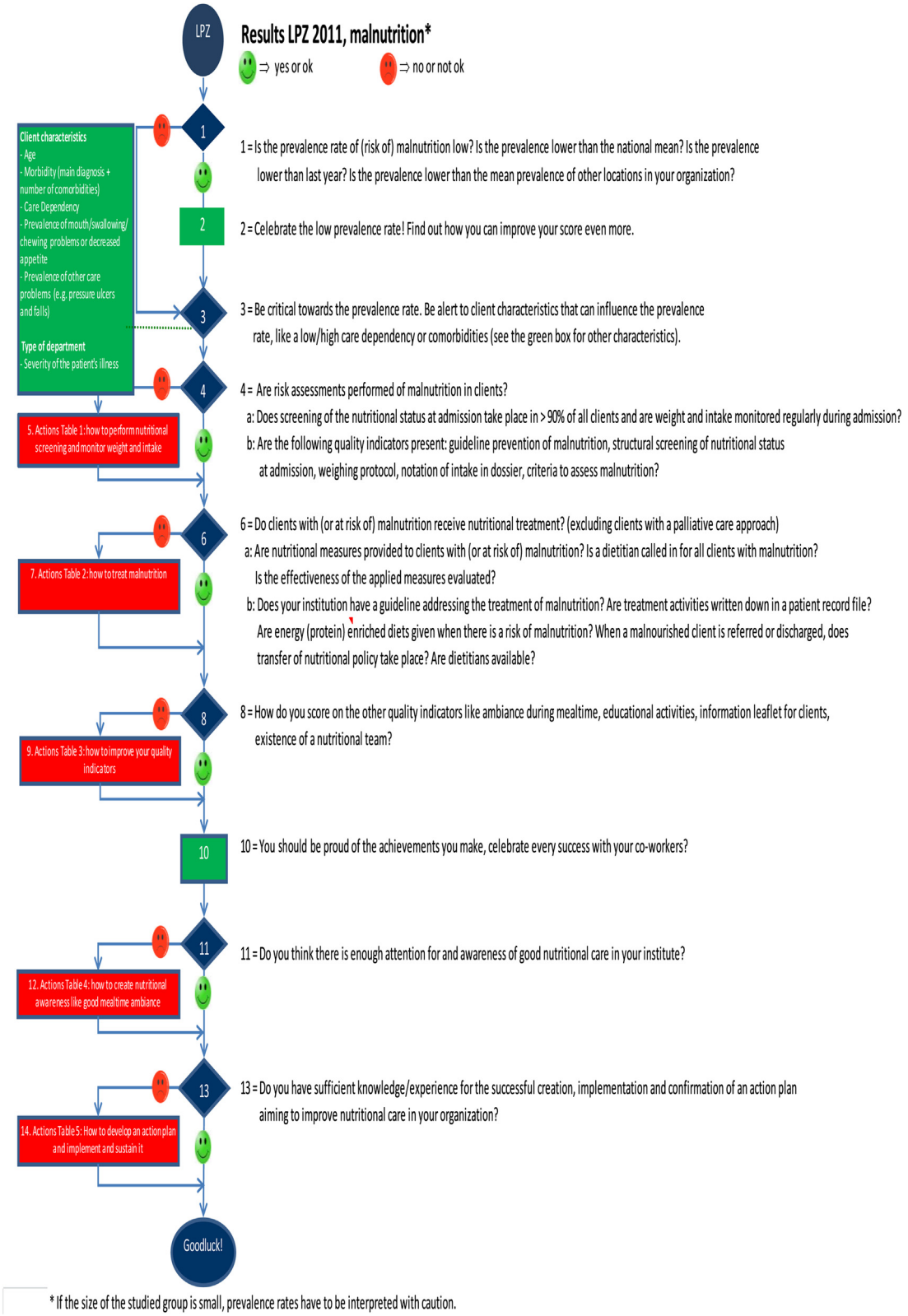

Fig. 2. Decision tree.

targets decision makers who have already agreed to review their practice. This is comparable to the LPZ feedback system in which organizations voluntarily participate to review the quality of care in their practices.

Feedback is likely to have a more direct effect on practice if presented close to the time of decision making [5,6]. Therefore, it was decided to report back to the organizations about the results of the LPZ audit within 2 wk after the audit.

Nevertheless, Greenhalgh [2] points out that the translation of evidence (research/audit findings) into clinical practice actions often is slow, unpredictable, and incomplete. This corresponds to the reactions given by the participants who indicated that the time period of 3 mo after the LPZ study was too short to start an improvement project. This shows that improvement is indeed needed, but that there was not enough time to start actively improving practice.

The low response rate may have influenced our research because it could be argued that the institutions working with the system were the only ones to respond to the evaluation questionnaire. This study was executed during the Dutch summer holidays, one of the busiest periods during the year, which also explains why not many institutions participated.

In future research, the effectiveness of the system should be studied in a longitudinal intervention study in order to assess its effect on processes and outcomes, such as malnutrition prevalence and health benefits, over a longer time period. Because LPZ focuses on different types of settings, this feedback system should also be adapted, disseminated and tested in the hospital and home-care setting.

Conclusion

A feedback system was developed and subsequently evaluated as very useful for improving nutritional patient care in the future. This system will be developed for other health care settings and tested to provide insight into how it influences actual practice.

Acknowledgments

We thank all the organizations that have participated in the LPZ over the years as well as the focus group members. Nutricia provided an unrestricted grant to perform this study.

References

[1] Rycroft-Malone J, Harvey G, Seers K, Kitson A, McCormack B, Titchen A. An exploration of the factors that influence the implementation of evidence into practice. J Clin Nur 2004;13:913–24.
[2] Greenhalgh T, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: systematic review and recommendations. Milbank Quarterly 2004;82:581–629. 38.
[3] Grimshaw JM, Shirran L, Thomas R, Mowatt G, Fraser C, Bero L. Changing provider behavior: An overview of systematic reviews of interventions. Med Care 2001;39(Suppl 2):II-2–II45.
[4] Grol R. Successes and failures in the implementation of evidence-based guidelines for clinical practice. Medical Care 2001;39:46–54.
[5] Jamtvedt G, Young JM, Kristoffersen DT, O'Brien MA, Oxman AD. Audit and feedback: effects on professional practice and health care outcomes. Cochrane Database of Systematic Reviews; 2006. http://dx.doi.org/10.1002/14651858.CD000259.pub2. Art. No.: CD000259.
[6] Mugford M, Banfield P, O'Hanlon M. Effects of feedback of information on clinical practice: a review. BMJ 1991;303:398–402.
[7] Meijers JMM, Candel MJ, Schols JMGA, Van Bokhorst-de van der Schueren MA, Halfens RJG. Decreasing trends in malnutrition prevalence rates explained by regular audits and feedback. J Nutr 2009;139:1381–6.
[8] Halfens RJG, Bours GJJW, Bronner CM. The impact of assessing the prevalence of pressure ulcers on the willingness of health care institutions to plan and implement activities to reduce the prevalence. J Adv Nurs 2001;36:617–25.
[9] http://www.fightmalnutrition.eu/fight-malnutrition/the-dutch-approach/.
[10] http://www.vilans.nl/Pub/Home/Ons-aanbod/Producten/Toolkits-Zorg-zelf-voor-Beter/Producten-Toolkit-Zorg-zelf-voor-Beter-Eten-en-Drinken.html.
[11] Meijers JMM, Halfens RJG, Van Bokhorst-de van der Schueren MAE, Dassen T, Schols JMGA. Malnutrition in Dutch healthcare: prevalence, prevention, treatment and quality indicators. Nutrition 2009;25:512–9.