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Using a Modified Nominal Group Technique to Elicit Director of Nursing Input for an Osteoporosis Intervention

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Abstract

Background—Barriers prevent osteoporosis care in nursing homes. Successful interventions designed to circumvent these barriers benefit from target recipient input during development.

Objective—To elicit suggestions for an osteoporosis quality improvement intervention designed for use by nursing home health care professionals.

Design—Modified nominal group technique.

Setting—Convenience sample of Alabama nursing home directors.

Participants—Fifteen Alabama nursing home directors of nursing were recruited by mailing. Sixty percent of respondents participated (n = 9).

Measurements—In the first phase conducted via teleconference, an experienced moderator used a preformulated question and elicited 41 suggestions to improve osteoporosis care in nursing homes. Substantively similar suggestions were combined and idiosyncratic suggestions were discarded resulting in the retention of 20 suggestions. In the second phase conducted by mail, the same participants rated the 20 suggestions based on perceived practicality and helpfulness. Elements were grouped into tertiles based on the ranking of the mean ratings of the 2 attributes and then cross-tabulated.

Results—All director of nursing (n = 9) participants completed both phases. The most practical, most helpful suggestions were information on fall prevention program implementation, osteoporosis treatment protocols, and osteoporosis medication information.

Conclusions—A modified nominal group technique provided useful information from nursing home directors of nursing for an osteoporosis intervention. The technique proved efficient and facile to perform.

Keywords

Osteoporosis; nominal group technique; intervention; quality improvement

Osteoporotic fractures among nursing home residents are common. Nursing home residents have higher rates of falling, higher risk of hip fracture and increased post-hip fracture mortality when compared to community-dwelling elderly.^{1–3} Recent reports suggest that 97% of nursing home residents have osteopenia or osteoporosis and that decreased bone density predicts fracture risk in nursing home residents.^{4,5} Despite the availability of safe, effective treatments and several national and international evidence-based clinical practice guidelines for osteoporosis management, gaps in the treatment of osteoporosis exist.^{6–17} Fewer than 5% of patients who suffer an osteoporotic fracture are referred for medical evaluation and treatment of osteoporosis.¹⁰ Few patients at risk for osteoporosis are referred for bone mineral density measurements.^{18–20} Reported rates of pharmacological treatment for osteoporosis following hip fracture range from 1% to 44%.^{19–23}

Based on the gaps between evidence and practice, the development of effective and efficient interventions to improve practicing providers' diagnosis and treatment of osteoporosis is imperative.²⁴ Multifaceted, interactive interventions aimed at health care providers may be an effective way to improve quality of care.^{25,26} However, effective multimodal osteoporosis interventions to benefit nursing home residents are lacking. To address this problem, the Secondary Prevention of Osteoporotic Fractures in Nursing Homes (SPOF) project is an ongoing study with the overall objective to develop and evaluate the effectiveness of a multimodal intervention targeting various health care providers (eg, physicians and allied health professionals, nursing staff, nurse assistants) to improve the care of osteoporosis in the nursing home. (This project was supported by an Agency for Healthcare Research and Quality [AHRQ] Centers for Education and Research on Therapeutics [CERTS] cooperative agreement [U18-HS10389] [D.A.L., K.G.S., L.L.C., R.M.S.]. Investigators also were supported by VA Medical Research Service and AG11268 from National Institute of Aging [K.W.L.], and National Institute of Aging K23 AG024787 [C.C.E.].) One component of the multimodal intervention is an Internet-based toolbox consisting of informational materials and tools to be used by directors of nursing and nursing staff for the purposes of improving osteoporosis care.

Successful interventions benefit from target recipient input during development.^{27,28} Focus groups composed of target users have been used to design educational programs and evidence-based guides.^{29,30} As an alternative to the focus group, the nominal group technique, originally developed by Delbecq, Van de Ven, and Gustafson for organizational decision making and problem solving, is a highly structured group process that is used to generate a prioritized list of responses to a question or problem.^{31–33} We describe how a modified nominal group technique elicited suggestions from nursing home directors of nursing on the content of a toolbox being developed as a component of a multimodal intervention to improve the care of nursing home residents with osteoporosis.

METHODS

Participants

Participants were identified in 2003 from a convenience sample of Alabama directors of nursing using data from the Alabama Quality Assurance Foundation, a nonprofit, physician-sponsored organization designated as Alabama's Medicare Quality Improvement Organization, and the Alabama Nursing Home Association. The first 15 subjects who responded to a solicitation mailing were recruited and 60% of these respondents participated. Participants were compensated \$250 for their participation. Institutional Review Board approval for the study was granted from the University of Alabama at Birmingham and all participants signed informed consent.

Modified Nominal Group Technique

We conducted a 2-phase modified nominal group technique to elicit recipient input on an osteoporosis intervention toolbox. The process produced a prioritized list of suggestions and proceeded in a series of formal steps (Fig. 1).

In the first phase, two 1-hour moderated teleconferences were conducted with a total of 9 participants to elicit suggested strategies for elements that were perceived as having potential for improving osteoporosis care in nursing homes. To elicit this information, an experienced moderator (R.M.S.) facilitated each teleconference session using the pre-formulated question: “What sorts of things would help you provide better care for nursing home residents who have osteoporosis?” Each participant in the group silently generated suggestions and wrote them down. Using a round-robin format, the participants engaged in feedback to concisely record each suggestion. Each recorded suggestion was discussed to provide clarification and evaluation.

Following the teleconferences, we examined the list of 41 nominated suggestions and systematically combined those that we viewed as being substantively similar (eg, several suggestions that referred to specific assistance devices were combined to form 1 suggestion: information on better assistance devices for patients). In addition, we made a decision to discard a small number of idiosyncratic suggestions (eg, “Residents should be moved outside more often for sun exposure”) that were thought to be incongruent with the specified information elicitation task. This systematic distillation procedure is standard in the nominal group technique.^{31–33} Our distillation of the original suggestions resulted in the retention of 20 suggestions for possible inclusion in the osteoporosis intervention toolbox.

In the second phase, the same 9 directors of nursing were mailed a survey to rate the 20 suggested elements with respect to perceived practicality and helpfulness for inclusion in the osteoporosis intervention toolbox. These 2 attributes were considered by the investigators to be requisite attributes for informational tools that could be provided in a quality improvement intervention toolbox. Because suggestions from the perspective of the directors of nursing were sought, participants were asked to consider their own personal interpretation of practicality and helpfulness, the emic perspective, rather than imposed external definitions of those attributes, the etic perspective, in rating the strategies.^{34,35} Participants rated each of the elements with regard to perceived practicality and helpfulness using a visual analog scale anchored by “impractical” or “not helpful” at the negative pole and “very practical” or “very helpful” at the positive pole respectively. The ratings of the elements were measured and converted to numerical values. The mean rating and standard deviation for each element were calculated. The mean practical and helpful ratings for prospective toolbox elements were ranked in descending order (highest mean to lowest mean). Each set of rankings was then categorized into tertiles and cross-tabulated. Thus, the element identified as Q13—*Information on fall prevention program implementation*, had the highest ranked mean ratings for both the *practical* and *helpful* dimensions.

RESULTS

All directors of nursing (n = 9) completed both phases of the nominal group process. Most participants were female (89%) and all participants were currently employed as nursing home directors of nursing. Table 1 shows the participants’ ratings of the elements based on perceived practicality and the participants’ ratings of the elements based on perceived helpfulness. The mean rating, standard deviation, and ranking of the mean rating for each element are shown in the table. Error bar plots (Fig. 2 and Fig. 3) show the variation of the mean ratings of the practical and helpful elements respectively. Less variation is seen in the mean ratings of elements deemed very practical (elements Q13, Q3, and Q7) or very helpful (elements Q13,

Q3, and Q7) reflecting more agreement among participants. More variation is seen in the mean ratings of elements deemed impractical (elements Q18 and Q20) or unhelpful (elements Q18 and Q20) reflecting less agreement among participants.

Three of the 20 suggestions were rated as most practical and most helpful (Table 2). The most practical, most helpful suggestions included the following: Information on fall prevention program implementation, osteoporosis treatment protocols, and osteoporosis medication information. Five of the 20 suggestions were rated as least practical and least helpful. The least practical, least helpful suggested elements included the following: Information on a comprehensive fall risk assessment tool, access to affordable bone density testing, information on hip protection, information on better assistance devices for patients, and tools that encourage physicians to provide better osteoporosis treatment. The suggested elements rated as most practical and most helpful were incorporated into the osteoporosis intervention toolbox.

DISCUSSION

This modified nominal group process provided useful information from health care professionals for the purposes of quality improvement intervention development. Although information on fall and fracture prevention was rated somewhat practical and helpful, information on fall prevention program implementation was rated most practical and helpful. In 1998, Hunt and Repa-Eschen³⁶ identified osteoporosis detection and management as important educational needs for nurses and patients. Similarly, the director of nursing participants in this study rated osteoporosis treatment protocols and information on osteoporosis medications highly. The directors of nursing did not favor more general osteoporosis educational programs for staff, patient family members, or themselves. These results inform us about the elements that directors of nursing may deem practical and helpful for the improvement of osteoporosis care in the nursing home.

Our work has some unique features. We developed an osteoporosis quality improvement intervention component targeting nursing providers who practice in nursing homes. We sought the input of the target users of the quality improvement intervention, practicing directors of nursing, during its development and we used a modified nominal group technique to elicit suggestions for its content. Importantly, this work provides a model of a collaborative approach between researchers and community health care providers, here directors of nursing, to identify helpful and practical strategies that can address real-life barriers to implementing recommended, evidence-based care. This research seeks to understand how to translate clinical research into practice and ultimately to improve the translation of clinical research results into practice, both challenges of the national clinical research enterprise,³⁷ by involving frontline health care providers in the translational research process, specifically the development of a quality improvement intervention.

Our findings are consistent with previous reports that nursing staff can provide useful information for the quality improvement of osteoporosis care. Recently, a national sample of directors of nursing participated in a survey of barriers to osteoporosis care in nursing homes.³⁸ Those directors of nursing identified facility staff osteoporosis knowledge and treatment reimbursement information as domains of perceived barriers to improving osteoporosis care in the nursing home.³⁸ Indeed, elements considered within those domains were regarded as highly practical and helpful elements for a quality improvement osteoporosis intervention by our nominal group participants. Frontline nursing home directors of nursing may prove instrumental in developing effective osteoporosis interventions as nurses and directors of nursing can play an important role in osteoporosis care.³⁹ To participate in improving osteoporosis care, nurses require more osteoporosis education and more input into the management of osteoporosis in the nursing home.^{36,40} Recent encouraging work

demonstrates that nurses are performing osteoporosis research and quality improvement, for example, through educational programs.^{41–43}

This nominal group process is a modification of a well-validated method to elicit target user input in the development of a study intervention. The benefits of the nominal group process are to minimize the effect of status and personality on response generation and to allow clarification of responses by participants.^{31–33} Disadvantages of the process may include the cost to gather participants, the requirement of advanced preparation, and the need for participants to agree to follow the structured method.^{31–33} Nominal group technique has been used previously for various purposes including setting research priorities, identifying barriers to effective disease management, developing in Internet-based psychosocial intervention, and developing guidelines and guideline implementation strategies.^{44–47} We applied the technique to a group of nursing home directors of nursing for the purpose of developing an intervention to improve osteoporosis care in nursing homes and we found the nominal group technique efficient and facile to perform.

Some limitations to our work exist. The major limitation of the study relates to the small number of participants in the groups. Delbecq and colleagues^{32–33} suggest that generally at least 2 representative groups of between 5 and 9 participants in each nominal group technique meeting are required to adequately address an issue. Our nominal group technique meeting consisted of the lower suggested number of participants for adequate coverage of an issue. However, since the generation of a prioritized list of helpful, practical elements for an osteoporosis quality improvement intervention was the goal of our nominal group technique meeting and the groups were representative of the target user population, it is unlikely that a key issue was omitted. Generalizability may be limited as we studied nursing home directors of nursing who work in one state in the Southeastern United States. It may be of benefit to conduct additional nominal group technique meetings with nursing home directors of nursing from other states to get an externally validated representation of what nursing home directors of nursing perceive to be helpful and practical content for an osteoporosis intervention. In the initial phase of the nominal group process, repetition of some suggestions did occur because of the 2 separate sessions and the teleconference format; the latter did not allow a list of suggestions to be made available to the groups. We have since developed novel, virtual technology that combines teleconference and Internet modalities to eliminate this problem in conducting the nominal group process.⁴⁸ Importantly, the impact of the most practical, most helpful elements to increase the intervention effect on improving osteoporosis care in the nursing home is not known as the larger study is in progress.

CONCLUSIONS

Effective osteoporosis interventions are needed to improve osteoporosis care in nursing home residents. Few quality improvement interventions have targeted the nursing home setting or involved directors of nursing in the intervention development process. We employed a modification of the nominal group technique to elicit useful suggestions from directors of nursing, the target recipients, for the content of an osteoporosis care intervention to be studied and used in the nursing home setting.

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Fig. 1.
Modified nominal group technique process.

Fig. 2.

Variation of practical toolbox element ratings. Elements are ranked by mean rating (highest to lowest) of perceived practicality. The circle designates the mean rating and the bars illustrate the standard deviation of the mean.

Fig. 3.

Variation of helpful toolbox element ratings. Elements are ranked by mean rating (highest to lowest) of perceived helpfulness. The circle designates the mean rating and the bars illustrate the standard deviation of the mean.

Table 1
Mean Rating, Standard Deviation (SD), and Ranking of 20 Elements by Director of Nursing Participants

Element		Practical		Helpful	
		Mean (Rank)	SD	Mean (Rank)	SD
Q1	Osteoporosis assessment tools	0.88 (8)	0.16	0.91 (7)	0.07
Q2	Fall and fracture prevention information	0.89 (6)	0.17	0.89 (9)	0.17
Q3	Osteoporosis treatment protocols	0.96 (2)	0.04	0.94 (2)	0.05
Q4	Pain management protocols	0.86 (11)	0.26	0.84 (13)	0.25
Q5	Information on hip protection	0.80 (17)	0.21	0.82 (15)	0.21
Q6	Osteoporosis treatment reimbursement information	0.92 (4)	0.08	0.91 (6)	0.08
Q7	Osteoporosis medication information	0.95 (3)	0.05	0.93 (4)	0.07
Q8	Osteoporosis educational programs for staff	0.90 (5)	0.16	0.88 (11)	0.16
Q9	Osteoporosis educational information for family	0.86 (10)	0.20	0.84 (14)	0.21
Q10	Educational osteoporosis teleconference for directors of nursing	0.85 (12)	0.17	0.80 (18)	0.21
Q11	Information on nutritional needs of osteoporosis patients	0.85 (13)	0.26	0.90 (8)	0.09
Q12	Information on exercise programs for osteoporosis patients	0.82 (15)	0.19	0.93 (3)	0.13
Q13	Information on fall prevention program implementation	0.97 (1)	0.05	0.95 (1)	0.07
Q14	Access to affordable bone density testing	0.81 (16)	0.19	0.80 (17)	0.26
Q15	Tools to establish a clear diagnosis of osteoporosis and monitor response to osteoporosis treatment	0.80 (18)	0.25	0.92 (5)	0.07
Q16	Information on a comprehensive fall risk assessment tool	0.85 (14)	0.34	0.82 (16)	0.33
Q17	Authoritative information on the most effective osteoporosis treatments	0.86 (9)	0.17	0.88 (12)	0.17
Q18	Tools that encourage physicians to provide better osteoporosis treatment	0.66 (20)	0.27	0.78 (19)	0.32
Q19	Education of staff on how to provide a safe environment	0.88 (7)	0.18	0.89 (10)	0.17
Q20	Information on better assistance devices for patients	0.73 (19)	0.27	0.77 (20)	0.21

Table 2
Tertiles of Ranked Means of Practical-Helpful Element Ratings*

	Helpful (Most)		(Least)
	1	2	3
Practical (Most)	1 Q13(1, 1)— Information on fall prevention program implementation. Q3(2, 2)— Osteoporosis treatment protocols. Q7(3, 4)— Osteoporosis medication information. 2 None	Q6(4, 6)— Osteoporosis treatment reimbursement information. Q8(5, 11)— Osteoporosis educational programs for staff. Q2(6, 9)— Fall and fracture prevention information. Q1(8, 7)— Osteoporosis assessment tools. Q19(7, 10)— Education of staff on how to provide a safe environment. Q17(9, 12)— Authoritative information on the most effective osteoporosis treatments. Q4(11, 13)— Pain management protocols. Q11(13, 8)— Information on nutritional needs of osteoporosis patients. None	None Q9(10, 14)— Osteoporosis educational information for family. Q10(12, 18)— Educational osteoporosis teleconference for directors of nursing.
(Least)	3. Q12(15, 3)— Information on exercise programs for osteoporosis patients. Q15(18, 5)— Tools to establish a clear diagnosis of osteoporosis and monitor response to osteoporosis treatment.		Q16(14, 16)— Information on a comprehensive fall risk assessment tool. Q14(16, 17)— Access to affordable bone density testing. Q5(17, 15)— Information on hip protection. Q20(19, 20)— Information on better assistance devices for patients. Q18(20, 19)— Tools that encourage physicians to provide better osteoporosis treatment.

* Values in parentheses are the respective rankings of mean ratings for the practical and helpful elements.