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Best Practices for Improving Intervention Fidelity That Every Nurse Should Know

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Research requires considerable investment of time, energy, critical reflection, and creativity in designing interventions appropriate for a target population and capable of improving health outcomes. It is imperative that the research plan includes processes for ensuring that the intervention is delivered as planned to maintain credibility of the findings (Horner, Rew, & Torres, 2006). In 2004, the Treatment Fidelity Workgroup of the National Institutes of Health Behavior Change Consortium published the results of a multisite collaborative project designed to identify and evaluate mechanisms for ensuring that complex interventions were delivered as designed when used in multiple sites and with different community populations (Bellg et al., 2004). The purpose of this column is to describe these best practices for intervention fidelity and discuss their application in current research.

Five Study Design Elements for Improving Intervention Fidelity

The Treatment Fidelity Workgroup identified five areas researchers should address as they design and implement a study to improve intervention fidelity. These include (a) ensuring that the intervention dose is the same for all participants across each condition, (b) standardizing interventionist training, (c) monitoring the intervention delivery, (d) evaluating participants' understanding of information provided, and (e) ensuring that participants use the skills taught in the intervention (Bellg et al., 2004). The first step is to include these five elements in the design of the study. The next and more critical step is to collect data (monitoring and evaluation data) to determine the degree to which fidelity was maintained.

Standardize Intervention Dose

Rew, Rochlen, and Murphey (2008) conducted a sexual health intervention for homeless adolescents that consisted of eight 1-hour sessions. The interventionists held degrees in public health, nursing, social work, and psychology. Health educators followed a standardized manual that included detailed instructions for learning activities, materials to

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be used, and the expected time allotted to each topic. The sessions combined didactic instruction, role-play, and group discussion and were led by a pair of health educators who were the same gender as the group participants (i.e., male educators for the male participant groups, female educators for the female participant groups). This study found a significant gender effect among the behavioral outcomes wherein females reported more assertive communication $F = 9.08, p = .003$, more general self-care $F = 38.28, p < .001$, and more safe sex behaviors $F = 14.36, p < .001$, than did males (Rew, Fouladi, Land, & Wong, 2007). The gender-based differences in outcomes may have been due to differences in intervention delivery in that the male groups were reported by the educators to be more disruptive (e.g., interrupting each other, quarreling over points discussed) and that “settling down and [getting them to] pay attention” was difficult (Rew et al., 2008, p. 75). In contrast, the female groups were reported to be very interested in the session activities, completed all activities, and they subsequently demonstrated significant behavioral gains as a result of the intervention (Rew et al., 2007). This study provides an example of high intervention fidelity for the female groups in contrast to the lower intervention fidelity for the male groups. In addition, by identifying differences in the intervention delivery the researchers were able to explain the differences in the study outcomes.

Standardized Interventionist Training

The use of an intervention manual that defines key elements, outlines procedures to follow, and includes guidelines for handling different components of the intervention is an essential tool for delivering standardized training of interventionists (Radziewicz et al., 2009). Horner and Fouladi (2008) used a structured intervention manual and conducted training sessions with lay educators who delivered an in-school asthma education program. The intervention was delivered in 15-minute segments during lunch breaks and there was little time for deviation from the fully scripted intervention. However, a scripted intervention is too limiting when the intervention is to be tailored to the individual's needs. For example, Radziewicz and colleagues (2009) used a tailored nurse-delivered coping and communication support intervention. Because the nurses' interaction style was a critical element in this intervention, their training included use of a manual, web-based and didactic training, role-play with feedback, and finally pairing of new interventionists with senior interventionists in their first few sessions to provide structured feedback.

Monitoring Intervention Delivery

Interventions that are well defined with clearly stated objectives, specific activities, and with scripts for content to be covered may be easier to monitor than interventions that must be tailored to address individual participants' needs (Song, Happ, & Sandelowski, 2010). Tyler and Horner (2008) used brief motivational interviewing with overweight school-age children (ages 8–12 years) and their parents in an intervention tailored to address the families' identified goals. A standardized format was used for each session that began with having the family identify what health behavior to address, followed by setting target goals, then assessing the child's and parent's self-rated motivation and confidence in working on target behaviors, and finally exchanging information. Within this standardized format, families could choose one of six target goals. Intervention sessions were monitored through two procedures. A structured field note was recorded for each of the four intervention sessions and detailed the identified goal, motivational scores for child and parent, and a summary of the strategies families identified they would use to meet the target goal and also to reduce or manage potential challenges or barriers. In addition, randomly selected intervention sessions were audio-tape recorded. A coding sheet was used to evaluate the audio-records and ensure that the motivational interviewing format was adhered to by the interventionists and that the content of the information exchange was consistent with the best clinical practice standards for the target goal selected by the family. An audit of the research records showed that field

notes were recorded for every session and fully 32% of the sessions were randomly selected for audiotape recording. A coding sheet was used to evaluate the audio-taped sessions. The audiotapes were reviewed independently by two members of the research team. The analysis of the intervention monitoring data showed that the interventionists had adhered to the format and presented approved content within the tailored individualized family sessions.

Evaluating Participants' Understanding of Information Provided

Incorporating participant assessments into the intervention enables the investigators to determine the degree to which the participants understand the information provided. These assessments are built into the study design and may include pre- and post-tests of knowledge or attitude changes, return demonstration of skills, or asking participants to restate what they have learned (Borrelli, 2011). In addition, many investigators will gather data on the participants' satisfaction with interactions that took place during the session or with the information provided (Borrelli, 2011).

Horner and Fouladi (2008) evaluated children's knowledge of asthma before and after a behavioral intervention was delivered to small groups of children in schools. Asthma knowledge was significantly improved in the treatment group when compared to the control group asthma knowledge, $F = 48.47, p < .001$. More importantly, intervention fidelity was very high in this study with a summated mean score of 2.8 out of 3 possible points (range 2.2–3.0) on a 12-item monitoring scale (Horner et al., 2006).

Ensuring Participants' Use of Skills Taught

Most psychoeducational interventions are designed to address target behaviors. For example, Horner and Fouladi (2008) found that children's skill in using a metered dose inhaler, an observer-rated activity, significantly improved as a result of an educational intervention ($F = 66.53, p < .001$). By the end of the 12-month intervention, the improvement in inhaler skill had been maintained and parents reported significant reductions in the frequency of their children's asthma symptoms.

Rhodes, Naylor, and McKay (2010) pilot tested a family physical activity intervention. Sedentary families ($n = 85$) with children between the ages of 4 and 10 years were randomly assigned into treatment ($n = 42$) or control groups ($n = 43$). All participants received an activity guide for families and the treatment group also received a family activity planning workbook and instructions on planning family leisure time activities. Attrition was relatively high for this 4-week study (76% completed the study), but the completion rate was comparable between treatment and control groups (74% and 79%, respectively). Of those who completed the study, 96% reported they read the materials given to them. More importantly, 84% of the treatment group families used the activity planning workbook. Treatment group families reported significantly more frequent engagement in physical activity ($F = 7.31, p < .001$) and higher total minutes spent in physical activities ($F = 6.49, p < .001$). On average, the treatment group families increased their physical activity by 60 minutes each week. In this example, the investigators found that a large majority of families used the materials given to them (i.e., fidelity to the study design) and, therefore, that the group differences could be attributed to the different educational materials given to treatment and control group families.

Conclusion

Attention to intervention fidelity is a critical element in study design and implementation. Well-trained interventionists are less likely to deviate from the intervention protocols (Borrelli, 2011). The use of intervention manuals that list each session's objectives,

instructional resources to use (e.g., handouts, posters), and detailed content for each session is valuable in training interventionists, but also in establishing the criteria to be monitored during sessions (Horner et al., 2006).

Intervention studies are designed to achieve designated behavioral outcomes. However, attention to participant satisfaction (Borrelli, 2011), knowledge gained (Horner & Fouladi, 2008), and skill use (Rhodes et al., 2010) are also important elements in evaluating intervention fidelity. By attending to intervention fidelity during the study design and implementation, the researchers are actively working to maintain internal validity of their studies.

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