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Preoperative Smoking Cessation Education Plan for Patients and Health Care Professionals

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An Independent Study

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Abstract

Surgical site infections are an undesired consequence of surgery. Smoking has been identified as a risk factor for developing a postoperative infection (Anderson, 2019). Patients undergoing elective colorectal surgery should be required to be tobacco-free for at least four weeks before surgery. Health care organizations can implement a preoperative smoking cessation program within their facility to assist patients in achieving this requirement. To do so, an education plan is needed to effectively disseminate the main components of the program to both patients and health care professionals. The efficacy of the education plan can be exponentially increased by selecting learning strategies that align with the concepts of the adult learning theory. Adults can learn best when they understand the rationale, they can direct their learning, the material is based in reality and it is directly applicable to their life and previous experiences (McEwen & Wills, 2014). Therefore, a preoperative smoking cessation education plan within an adult learning theory framework can include the following evidence-based learning strategies: pamphlets, videos, computer-based training courses, in-services, poster board presentations, quick reference cards, and unit mentorships.

Preoperative Smoking Cessation Education Plan for Patients and Health Care Professionals

Surgical-site infections (SSIs) have “an overall estimated incidence of 160,000 to 300,000 cases annually” and “total costs per SSI case range between \$11,500 to more than \$60,000” (Amri, Dinaux, Kunitake, Bordeianou, & Berger, 2017, p. 686). One of the contributing factors associated with the development of SSIs is cigarette smoking (Armstrong & Meyr, 2018). Despite this shocking statistic that demonstrates a pervasive perioperative complication, patients and health care professionals lack the knowledge and resources that are integral for combatting the development of SSIs.

A previous literature review was completed to answer the following PICO question: “in adult patients undergoing elective colorectal surgery, does preoperative smoking cessation compared with no preoperative smoking cessation decrease the risk of developing a surgical-site infection?” (Anderson, 2019). After reviewing the evidence, it was determined that “preoperative smoking cessation... decreases the risk of developing a surgical-site infection in adult patients undergoing elective colorectal surgery” and two practice recommendations were identified (Anderson, 2019, p. 10). The first practice recommendation encourages potential surgical patients to participate in a four-week tobacco cessation program before undergoing elective colorectal surgery (Anderson, 2019). The second practice recommendation emphasizes the importance of having the preoperative surgical patient be tobacco-free. This can be verified by having the patient complete a urine cotinine test at two separate pre-determined time frames prior to surgery (Anderson, 2019).

In order to successfully implement these identified practice recommendations, preoperative smoking cessation education ought to be provided to both patients and health care professionals. For this independent study paper, an in-depth literature review will be conducted

to identify evidence-based education strategies for adult learners. The results of this literature review will be utilized to create a proposed preoperative smoking cessation education plan within an adult learning theory framework. “If all patients were offered a smoking-cessation intervention before surgery... this could result in 2 million complications avoided” every year, “resulting in large savings for both patients and health services” (Mills et al., 2011, p. 152). Therefore, designing an education plan that is effective and evidence-based is crucial to communicate the importance of the identified practice recommendations and to provide adequate training (Anderson, 2019).

Purpose

To implement the previously identified practice recommendations for reducing postoperative SSIs, a comprehensive education plan must be created. This independent study paper will synthesize the evidence from an in-depth literature review to identify the most current and effective education strategies for adult learners. These strategies will be incorporated into the education plan and will provide the foundation for the smoking cessation program objectives.

Ultimately, the comprehensive education plan will communicate the importance of preoperative smoking cessation in reducing the risk of developing an SSI. The education plan will also disseminate strategic smoking cessation interventions to all involved health care professionals. Furthermore, the plan will delineate specific smoking cessation program training initiatives that will be provided to key stakeholders.

Significance

The intended audiences for the preoperative smoking cessation education plan are patients and health care professionals. More specifically, the focus patient population will be further narrowed to include patients undergoing any elective abdominal colon surgery. In

addition, the health care professional audience will include any physician or nurse providing preoperative education to this patient population. For the purpose of this study, it can be assumed that the intended audience for the preoperative smoking cessation education plan will be adults with varying levels of medical literacy. The question then becomes, how do adults learn best?

The term “andragogy” was made popular by Malcolm Knowles (1913-1997) who focused on further developing the theory of adult learning (McEwen & Wills, 2014, p. 402). According to the principles of the adult learning theory, teachers should take on the role of a facilitator while “responding to the needs of the learner and providing the learning resources required for learning” (McEwen & Wills, 2014, p. 402). Billings and Halstead (2020) also emphasize that the adult learner is best motivated to learn when the subject is of personal relevance. Moreover, “adults need a climate that enables them to assume responsibility for their learning” (Billings & Halstead, 2020, p. 256).

As we consider the appropriate strategies to utilize when creating a preoperative smoking cessation education plan, the current evidence must be reviewed. Upon doing so, insight can be gained as to how adult patients and health care professionals learn best. Furthermore, evidence-based teaching strategies will be used to create an education plan that is relevant and effective. Each component of the education plan must be intentionally designed to meet the needs of the learner while utilizing available resources. Therefore, a literature review will be conducted to guide the design of an education plan that is based upon the principles of the adult learning theory.

Theoretical Framework

To successfully create, implement, and evaluate an education plan for a preoperative smoking cessation program, the adult learning theory will be used as a conceptual framework.

One theorist that further developed the adult learning theory is Malcolm Knowles. He articulated the significant changes that occur as one's learning matures and evolves as an adult. *Andragogy* is a term identified by Knowles to differentiate adult education strategies from strategies used to educate children (Billings & Halstead, 2020). These differences were compiled and are known as *Knowles' Assumptions of Adult Learners*. They are as follows:

1. Need to know: Adults need to know why they need to learn something.
2. Self-concept: As people mature, their self-concept moves from one of being dependent toward one of being self-directed.
3. Experience: As people mature, they accumulate a large amount of experience that can serve as a rich resource for learning.
4. Readiness to learn: Real-life problems or situations create a readiness to learn in the adult.
5. Orientation to learning: As a person matures, his or her time perspective changes from one of postponed application of knowledge to immediacy of application.
6. Motivation: Adults are primarily motivated by a desire to solve immediate and practical problems. As a person matures, motivation to learn is stimulated by internal stimuli rather than external stimuli. (McEwen & Wills, 2014, p. 403)

In light of these six assumptions, educators should carefully consider the intended audience of the educational program or activity. By doing so, strategic learning activities can be designed to fully engage adult learners and foster an environment of knowledge advancement that can lead to lasting behavioral changes for both patients and health care professionals. It is also important to note that the role of the educator within the adult learning theory is that of a

facilitator of learning in which they “work collaboratively with students” (Keating & DeBoor, 2018, p. 111).

The principles of the adult learning theory can be operationalized to design an effective education plan. To do so, Knowles’ five-step program planning model will also be used as a guide to direct specific actions to implement within each phase of the preoperative smoking cessation education plan. The five steps include:

1. Diagnosing learning needs.
2. Formulating learning needs.
3. Identifying human material resources for learning.
4. Choosing and implementing appropriate learning strategies.
5. Evaluating learning outcomes. (Merriam, 2001, p. 5; Smith, 2002, p. 9)

Within each of these steps, it is crucial for the educator to keep in mind that “the single most important thing in helping adults to learn is to create a climate of physical comfort, mutual trust and respect, openness, and acceptance of differences” (McEwen & Wills, 2014, p. 402).

Process

Evidence-based educational strategies were identified by completing a comprehensive literature review. Three databases were included in the initial search based upon their relevance to the fields of nursing and education. These databases included the Cochrane Database of Systematic Reviews (CDSR), PubMed, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). Three keywords were then selected based upon the theoretical framework being used for the education plan along with the intended audiences. The three keywords that were initially selected included *adult learning theory*, *patient education*, and *health professional education*. Unfortunately, when these terms were connected with the Boolean connector “AND”,

the search produced zero results in all three of the databases. Therefore, the keywords were modified to *adult learning*, *patient education*, and *staff education* to capture a broader scope of articles.

The CDSR data base was searched first with the second set of keywords. *Adult learning* yielded 77 results, *patient education* yielded 331 results, and *staff education* yielded 55 results. An advanced search was conducted by connecting the keywords with the Boolean connector “AND” and the following filters were applied: English language, human species, adults, peer-reviewed, and academic journal articles. Unfortunately, the advanced search yielded two results and both articles were irrelevant to the subject matter and were thus, eliminated.

The second database that was searched with the selected keywords was PubMed. *Adult learning* yielded 8,826 results, *patient education* yielded 97,828 results, and *staff education* yielded 78,750 results. After conducting an advanced search with the Boolean connector “AND”, the journal article, humans, English language, and adult filters were applied and reduced the results down to six articles. There were three articles published within the last 10 years and two of the three were kept after reviewing the articles for relevancy.

CINAHL was the last database that was searched using the same three keywords. *Adult learning* yielded 3,478 results, *patient education* yielded 191,703 results, and *staff education* yielded 37,694 results. After connecting the keywords with the Boolean phrase “AND”, 77 results were yielded. Articles were then filtered to include only academic journals, articles written in English and pertaining to adults within the last 10 years. This narrowed the results down to 27 articles. These articles were then reviewed for relevancy and 16 articles were eliminated. The ancestry search method was then utilized on the remaining 13 articles and four

additional articles were located. As a result, a total of 17 articles will be used for the literature review.

Review of Literature

Since it has been previously demonstrated that a preoperative smoking cessation program can help reduce the occurrence of SSIs, the next step is to create an education plan. More specifically, the education plan should identify pertinent learning objectives, strategic education activities, and effective evaluation techniques. By doing so, the education plan can be designed to meet the needs of the intended audience. The next question that must be grappled with is, what strategic activities have been proven to be the most effective in educating adults? An in-depth literature review has been conducted to identify educational activities that are currently being used and have proven to be effective in meeting the intended learning objectives. In addition, each piece of evidence was evaluated for credibility and was classified into one of seven levels according to the Melnyk Levels of Evidence (University of Michigan Library, 2019). As stated previously, a total of 17 articles were reviewed. One article is level one evidence, one article is level two evidence, 13 articles are level six evidence, and two articles are level seven evidence.

The first article that was critiqued reviewed factors that enhance self-regulated learning (SRL) amongst 17 medical students from two Dutch training universities. This was a retrospective study and data was gathered via semi-structured interviews. According to the results of the study, individual goals, autonomy, learning opportunities, and outcomes were all factors that positively influenced student learning (Berkhout et al., 2015). Developing shared goals amongst the students was emphasized as a vital component in developing the motivation to learn (Berkhout et al., 2015). It was also noted that when learners have a sense of autonomy,

“they are better able to take control” of their learning (Berkhout et al., 2015, p. 596). Since this study was a single qualitative study, it is level six evidence and significant limitations exist.

Best et al. (2011) conducted retrospective chart reviews to evaluate the effectiveness of an education plan that was implemented according to an adult learning theory framework. The education plan was designed to raise awareness of a present problem on an oncology unit in the United States, alter current practice, and improve patient outcomes. The plan consisted of 11 steps that were implemented over one year. Some of the initial steps included identifying the problem, obtaining approval from the institutional review board, and conducting chart reviews. Once these steps were completed, stakeholders were identified, interdisciplinary committees were formed to update pertinent policies and patient education materials. Furthermore, education was provided to the appropriate physicians and staff via “group and one-on-one in-services, poster board presentations, and follow-up in-services” (Best et al., 2011, p. 666). After education was delivered, the practice change was implemented and the results were evaluated. One of the results of the study was identifying that “comprehensive nurse, pharmacy, and physician education are needed for the successful implementation of evidence-based practice changes” (Best et al., 2011, p. 661). This study was a single descriptive study with limitations and is classified as level six evidence.

The next study “determined the effect of a computer-based educational program in preparing nurses to complete an assessment for venothrombotic risk on all patients admitted to a community hospital” (Blum et al., 2012, p. 173). This is also level six evidence of a single, qualitative prospective study. The research was conducted at a small hospital in Florida with 222 nurses of varying ages, experience levels, and ethnicity. The education program was developed by a “team consisting of nurses, nursing administrators, nurse educators, physicians, and a

pharmacist” (Blum et al., 2012, p. 174). All nurses were encouraged to complete the computer-based instruction (CBI) via emails, flyers, and reminders from nurse managers. The benefits of CBI include “relative ease of implementation, cost-effectiveness, and ability to reach a large population” (Blum et al., 2012, p. 174). In addition, “this method offers consistency of content and permits the learner to proceed at a pace that is comfortable to them while advancing and moving backward to reinforce learning objectives” (Blum et al., 2012, p. 174). The authors emphasized that CBI incorporates principles of adult learning by allowing participants to have control over their learning (Blum et al., 2012). Even though a significant portion of nurses completed the CBI, the hospital failed to immediately implement the intervention. Thus, the majority of the nurses forgot the content of the CBI and an additional live-format education class was offered to reinforce the information. Therefore, Blum et al. (2012) asserted that the “timing of educational programs for changes that are coming can be problematic; therefore, advance planning, careful communication, and reevaluation of readiness is essential” (p. 176).

Another level six evidence prospective study was conducted by Cadet et al. (2016) to evaluate the effectiveness of a training intervention provided for nine Certified Nurses’ Aides (CNAs) employed at one nursing home. Data were collected from participant interviews and pre- and post-intervention surveys. To deliver the training to the CNAs, a PowerPoint presentation was utilized along with videos, and follow-up discussion questions over the course of a single 60-minute session (Cadet et al., 2016). The results of the study were inconclusive and did not demonstrate a significant improvement in retained knowledge following the provided training. Upon evaluating the results of the study, the authors theorized that the training may have been more effective if the information was delivered over multiple sessions and eliminating any

potential language barriers (Cadet et al., 2016). Given the small sample size, the single study design, and the potential language barrier, this study had significant limitations.

“One of our goals as educators should be to develop our clinical professionals to become more self-directed, lifelong learners” (Clapper, 2010, p. 13). This level seven evidence provides expert opinion on how to incorporate adult learning theory principles when designing simulation learning opportunities for professional development among health care providers. Overall, Clapper (2010) emphasized the necessity to create environments that allow the learners to actively collaborate in a space that feels safe and supportive. Likewise, learners need to be able to reflect on their own previous experiences that can help direct additional learning (Clapper, 2010).

The next study that was critiqued was a cluster randomized controlled trial which is level two evidence. This study was a prospective study designed to evaluate education interventions for Canadian patients and chiropractors managing neck pain. The provided education varied from webinars, online videos, case studies, and a review of current practice guidelines (Dhopte, French, Quon, Owens, & Bussi eres, 2019). The researchers noted that it was difficult for some participants to complete all of the education interventions due to its lengthy design. However, the participants who completed all portions of the education validated the usefulness of the interventions and incorporated the information into their practice. The authors concluded that “online educational training can be effective to promote intimate, meaningful, human-to-human interactions to foster hope and build a trusting relationship” among chiropractors and their patients (Dhopte et al., 2019, p. 11). Unfortunately, since only a small number of participants completed the education, the study is limited in its application.

A systematic literature review was conducted by Gruman et al. (2010) to identify key strategies for developing and implementing patient education. This level one evidence focused on specific behaviors that demonstrate and promote patient engagement (Gruman et al., 2010). “Advances in health care require that individuals participate knowledgeably and actively in their health care to realize its full benefit” (Gruman et al., 2010, p. 355). Overall, these authors urged patient education professionals to develop educational interventions that inform and empower patients to be knowledgeable about their health and the care they receive.

Hammer and Craig (2008) recognized the importance of allowing adult learners to participate in their learning. Through face-to-face interviews, these authors conducted level six evidence with a retrospective, qualitative study to evaluate the effectiveness of involving former nurses in the implementation of educational programming. Nine nurses with expired nursing licenses were identified and selected to complete strategic learning activities that would allow them to renew their licenses and return to the health care field as active nurses. Learning activities included lectures, computer-based training, and skill assessments (Hammer & Craig, 2008). According to the results of the participant interviews, each learning activity was considered to be effective; however, the participants conveyed dissatisfaction with completing the self-paced activities alone (Hammer & Craig, 2008). Even though they liked to have some control over their learning, they emphasized the need to have “support and guidance” available if needed (Hammer & Craig, 2008, p. 364).

Similarly, Holt, Lewis, Klimpel, Sloan, and Aguda (2010) conducted a retrospective study with a pre-test/post-test design to evaluate the effectiveness of an educational activity that was conducted at a nursing skill fair. The education content was standardized and was delivered to 75 medical-surgical nurses. In addition, the authors incorporated principles of the adult

learning theory into the design of the education activity by providing learners with the rationale for learning the content, allowing learners to build upon their previous experiences, and communicating the importance of immediately incorporating the new information into their current practice (Holt, Lewis, Klimpel, Sloan, & Aguda, 2010). Overall, the study highlighted the significance of incorporating effective staff education to continually provide “quality care for patients”, improve “patient outcomes”, and reduce health care costs (Holt et al., 2010, p. 217). This study was level six evidence and was limited by a small sample size with minimal variation in participant demographics.

Inoue, Fabbro, and Mitchell (2017) also assert the importance of frequently offering educational opportunities for health care staff; however, they further examined how staff educational needs can be identified. Focus groups were conducted with 14 staff nurses in a Japanese hospital. During each focus group, the nominal group technique (NGT) was utilized to identify specific educational needs that were communicated by the nurses. Also, the results of the focus groups were combined with adult learning theory principles to design meaningful education opportunities that addressed the identified learning needs (Inoue, Fabbro, & Mitchell, 2017). This study was level six evidence with a retrospective, qualitative design.

Online learning modules and team-based simulations allow health care staff to participate in training in an environment that is “safe, realistic, and supportive” (Jacobs, 2017, p. 235). Through this retrospective, descriptive study, Jacobs (2017) sampled 84 nurses on the obstetrics unit of a hospital in Illinois and was able to investigate the benefits of providing obstetrical hemorrhage education. This study is level six evidence and data were gathered using a group post-test method. The results revealed that 93% of participants felt that the provided simulation training was beneficial. More specifically, Jacobs (2017) noted that simulation training “has the

potential to improve teamwork and communication in an interdisciplinary team by enabling team members to accurately review processes, performance, and communication and to identify areas of strength as well as areas for improvement” (p. 239).

Another descriptive study (level six evidence) conducted by Kroning (2014) evaluated a staff in-service educational program for nurses at a regional acute care hospital. The program was developed according to an adult learning theory framework and was designed to educate nurses on the topic of advanced health care directives (AHCD). The program focused on “assisting nurses to understand why they should gain AHCD knowledge” and helping them “form a connection between (the) information and why it is being learned” (Kroning, 2014, p. 224). The education program was a two-hour in-service consisting of open discussions, surveys, a lecture presentation, a question and answer session, and role-play activities (Kroning, 2014). In support of adult learning, the in-service was designed to promote active participation and “mutual inquiry” (Kroning, 2014, p. 224).

Interestingly, the author identified several key components that must be obtained to ensure the successful implementation of any staff education activity. First, the education program is in alignment with the mission of the health care organization (Kroning, 2014). Secondly, “engaging stakeholders such as hospital administration, nursing leaders, (and) staff development personnel” is vital (Kroning, 2014, p. 225). Another important consideration is having the organizational leaders determine if the educational activity will be mandatory for staff to attend and the cost estimate of paying the staff for their time (Kroning, 2014). Lastly, providing current educational materials for participants was also identified as being an essential component (Kroning, 2014).

Expert opinion is level seven evidence and was provided by Longtin et al. (2010) in analyzing factors that contribute to a patient's participation level during the care they receive from health care providers. These authors asserted the importance of empowering patients to participate in their care. In order to do so, they advised creating an education program that informs patients of the importance of health care interventions and how those interventions can improve the patient's overall health status. However, Longtin et al. (2010) also note several barriers to participation that must be identified and addressed with each patient. Despite the barriers and logistical challenges to creating a patient education program, the authors emphasized that "patient participation could be useful to improve quality of care and prevent medical errors" (Longtin et al., 2010, p. 53).

Team-based learning (TBL) is an educational strategy that can be utilized to train staff. In a prospective, qualitative study, McRae, Chan, Ai, Hulett, and Coleman (2017) examined the effectiveness of one TBL session that was provided to 60 nurses with varying levels of experience at a 900-bed hospital in Los Angeles. This study is level six evidence and the results demonstrated that one TBL session is an effective method for educating staff. Unfortunately, the study design did not include other members of the interdisciplinary team causing the results to be limited. During the session, the staff viewed a PowerPoint presentation, completed an assessment test individually and as a team, and participated in team discussions (McRae, Chan, Ai, Hulett, & Coleman, 2017). Each team was comprised of five to seven nurses and all participants engaged in "active learning methods consistent with adult learning principles" (McRae et al., 2017, p. 61).

Spies, Seale, and Botma (2015) also "recommend that nurse educators maximize adult learning by creating learning environments that are student-centered as opposed to teacher-centered" (p. 6). Through a retrospective, qualitative study design, these authors evaluated

whether or not 18 adult learners of a postgraduate nursing education program in South Africa exhibited the expected adult learning behaviors. This is level six evidence and even though this group of adult learners seemed to rely on direction from the educator more heavily than what is expected within an adult learning construct, it was identified that “adult learners need immediate and frequent feedback as they progress through learning events” (Spies, Seale, & Botma, 2015, p. 4). As a result, Spies, Seale, and Botma (2015) identified the importance of educators providing opportunities to guide “adult learners in developing effective learning techniques to maximize the benefits of their experience and knowledge by fostering independence and self-direction” (p. 1).

Upon implementing a quality improvement project, 159 NICU nurses were provided with an intentional education program. Walter and Robb (2019) conducted a prospective, qualitative study and gathered data from a pretest, posttest, and retention test method. The education program consisted of a short, in-person lecture with PowerPoint along with four additional weeks of direct mentorship from the program manager. In addition, the PowerPoint was made available for staff to review again online, posters were placed around the NICU, and each staff was provided with a quick reference card to reinforce the key concepts. The mentorship provided by the project manager on the unit also reinforced the important education principles while immediately addressing barriers that were identified by the staff (Walter & Robb, 2019). The results of the study demonstrated that the education program effectively empowered the nurses to incorporate the new principles into their professional practice (Walter & Robb, 2019). This study is level six evidence and the results are limited to one NICU department.

The last article critiqued is also level six evidence and is a descriptive study evaluating the role of the nurse manager in relation to staff education. Yen, Trede, and Patterson (2016)

gathered data by observing and interviewing nurse managers. As a result, it was identified that nurse managers play a significant role in the successful orientation of new staff along with assessing, identifying, and managing the performance of current staff (Yen, Trede, & Patterson, 2016). It was also concluded that the nurse manager's role is crucial to creating effective learning environments, engaging staff participation, and improving the quality of care that is provided by their staff (Yen, Trede, & Patterson, 2016).

After completing an in-depth literature review with a critical analysis of the aforementioned articles, evidence-based educational strategies for both patients and health care professionals were identified. A large variety of educational activities have been developed and include PowerPoint presentations, computer-based training modules, in-person lectures, videos, group discussions, skill labs, webinars, case studies, simulations, role-play, team-based learning, posters, and unit mentoring. A brief discussion of the advantages and disadvantages of each strategy was also incorporated. One of the main themes identified from this review was the importance of designing an education program within an adult learning theory framework that is appropriate for the intended audience, utilizes available resources, and frequently reinforces key concepts.

Discussion

Interpretation

To combat the prevalence of SSIs, patients and health care professionals need to be equipped with appropriate resources. Since current evidence shows that the risk of developing a surgical site infection can be reduced with preoperative smoking cessation, it is imperative to implement a smoking cessation program to help support patients undergoing elective surgery (Anderson, 2019). The components of a preoperative smoking cessation program include

providing resources to help the patient quit smoking four weeks prior to surgery and verifying that they are tobacco-free one week before surgery and the morning of surgery.

In order to effectively implement this program, both patients and health care professionals need to be provided with education. Therefore, an education plan must be developed to ensure that evidence-based adult learning strategies are utilized to empower patients, affect practice change, and reduce the overall incidence of SSIs. In addition, after the implementation of the education plan, the patient and health care provider should be able to:

1. communicate the importance of preoperative smoking cessation in reducing the risk of developing an SSI,
2. identify three preoperative smoking cessation interventions that are offered to potential elective surgical patients, and
3. discuss how preoperative smoking cessation interventions are implemented.

For patients and health care providers to be able to successfully achieve these learning objectives, the education plan needs to incorporate principles of the adult learning theory. As stated above in the theoretical framework section of this paper, adults need to understand the rationale for learning something new, their previous life experiences serve as a springboard for new learning, and the content needs to be directly applicable to their life (McEwen & Wills, 2014). After completing the literature review, several effective education strategies were identified. Patient education strategies that were successfully implemented include a patient information pamphlet and educational video. Similarly, strategies that were proven to be effective in educating health care professionals include computer-based training, in-services, poster board presentations, quick reference cards, and unit mentorships. Therefore, the preoperative smoking cessation education plan will incorporate these evidence-based strategies.

Outcome/Dissemination

To implement the preoperative smoking cessation education plan, Knowles' five-step program planning model and the evidence-based practice (EBP) Implementation Plan will be utilized (Merriam, 2001; Gallagher-Ford, Fineout-Overholt, Melnyk, & Stillwell, 2011).

Knowles' five-step program planning model:

1. Diagnosing learning needs.
2. Formulating learning needs.
3. Identifying human material resources for learning.
4. Choosing and implementing appropriate learning strategies.
5. Evaluating learning outcomes. (Merriam, 2001, p. 5; Smith, 2002, p. 9)

Similarly, Gallagher-Ford, Fineout-Overholt, Melnyk, and Stillwell (2011) suggest identifying key stakeholders, collaborating with the education department, and gathering the necessary resources to successfully implement an education plan. As a result, each of these dissemination components will be discussed in further detail.

The first part of the education plan is identifying the key stakeholders. The preoperative smoking cessation team includes "patients, colorectal surgeons, clinic staff of the colorectal surgery department, vice president of nursing, director of surgical operations, along with the clinic staff and director of the behavioral health department" (Anderson, 2019, p. 9). After identifying all key stakeholders, collaboration will be done with the organization's education department to implement Knowles' five-step program planning model.

Step one in the program planning model is diagnosing learning needs. The learning needs of the patients and health care professionals must be considered through the lens of the adult learning theory. Accordingly, the patients and health care professionals need to learn why the

preoperative smoking cessation program is important, how the program is relevant to them personally, and the proposed benefits of the program. These learning needs were then formulated into the previously listed learning objectives which is step two. After implementing the preoperative smoking cessation education plan, it is expected that each patient and health care professional will be able to:

1. communicate the importance of preoperative smoking cessation in reducing the risk of developing an SSI,
2. identify three preoperative smoking cessation interventions that are offered to potential elective surgical patients, and
3. discuss how preoperative smoking cessation interventions are implemented.

The third step of the program planning model is identifying the necessary learning resources. Education materials include a patient information pamphlet and video, a curriculum for computer-based training, in-service handouts, informational poster-boards, and quick reference cards. All of these materials are essential to clearly communicate the objectives of the program.

Step four is selecting learning strategies that are appropriate for the intended audience. As previously stated, the program is intended for adult patients and health care professionals. Therefore, evidence-based learning strategies in alignment with the adult learning theory were selected to achieve the identified learning objectives. The learning strategies that will be implemented in the patient education plan include an informational pamphlet and video. More specifically, once it has been determined that the patient who currently smokes is a candidate for an elective abdominal colorectal surgery, the clinic nurse will provide the patient the opportunity to watch a brief video explaining the risk of SSIs and how the risk can be reduced with

participation in a preoperative smoking cessation program. A pamphlet that reemphasizes this information will also be provided to the patient. The patient will then be referred by the colorectal surgeon to the behavioral health department to begin their four-week smoking cessation program.

In order to effectively implement the education plan amongst the designated health care professionals, a representative from the education department will first attend the colorectal department meeting to introduce the program. Then each health care professional within the colorectal surgery department will be assigned a computer-based training course that will introduce the components of the preoperative smoking cessation program. A department in-service will then be conducted to actively reinforce the information from the computer-based training course and will allow for further discussion and questions. Handouts will be provided at the in-service and poster-boards will be displayed around the department to provide visual reminders of the program. Each health care professional will also be provided with a quick reference card they can place next to their workstation as a cue to the steps they need to take to implement the smoking cessation program for their patients. Lastly, a representative from the education department will be present in the colorectal surgery clinic during the first four weeks of the program implementation. Unit mentorship allows the principles of the program to be reinforced, provides immediate assistance to the health care professionals, and can identify any barriers to implementation (Walter & Robb, 2019).

The fifth and final step to the program planning model is evaluating learning outcomes. The learning outcomes need to be evaluated to determine if the education plan was successful in achieving the learning objectives. To make this determination, several evaluation methods will be used. Patients will be asked to complete a survey at the end of the four-week smoking

cessation program. Similarly, health care professionals will also be given a survey after the first four weeks of the program implementation. These surveys will evaluate the effectiveness of executed learning strategies. Also, data will be collected by the quality and performance improvement department to determine program compliance levels amongst the patients and health care professionals.

Implications for Nursing

As a result of the preoperative smoking cessation education plan, several implications for nursing have been identified. The smoking cessation program could expand beyond colorectal surgeries to include all elective surgical specialties. This would affect current nursing practice by recommending all health care professionals in these areas to alter their practice and implement the smoking cessation program into their preoperative screening and education. In addition, nurse educators would need to consider how to best implement the smoking cessation education plan within their specific departments and how to provide ongoing education after the program's initial implementation. Nursing policy would also need to be created at the organizational level to support and delineate the practice protocols enforcing the evidence-based practice components of the smoking cessation program. Lastly, further research is recommended to determine the effectiveness of the outlined learning strategies to educate patients and health care professionals on the importance of implementing a preoperative smoking cessation program to reduce the risk of developing SSIs.

Summary

To reduce the prevalence of SSIs among patients who undergo elective surgery, a preoperative smoking cessation program should be implemented. By doing so, patients can receive the resources and support they need to quit smoking before surgery. Through this

program, patients can be empowered to take an active role in changing their habits and improve their overall quality of life. In addition, preoperative patients who have been tobacco-free for at least four weeks prior to surgery reduce their risk of postoperative complications including infections.

To successfully implement a smoking cessation program within a health care facility, both patients and health care professionals need to be informed and educated. The adult learning theory is a framework that can be utilized to design an effective education plan. Several key assumptions about adult learning must be incorporated when identifying learning needs and selecting appropriate learning strategies. For example, adult learners need to understand the rationale for learning something new (McEwen & Wills, 2014). Furthermore, adults prefer to direct their learning and draw upon their previous experiences (McEwen & Wills, 2014). According to the adult learning theory, adults also learn best when the topic is realistic, relevant, and can be immediately applied to their life (McEwen & Wills, 2014).

With that in mind, the learning strategies of an education plan for patients and health care professionals should incorporate the principles of the adult learning theory. Learning strategies should also be evidence-based and proven to be effective in achieving the intended learning objectives. After conducting an in-depth literature review, effective learning strategies were identified and incorporated into the preoperative smoking cessation education plan. Preoperative patients will be introduced to the smoking cessation program through the use of an informational pamphlet and educational video. Likewise, health care professionals will be educated on how to implement the smoking cessation program through the use of computer-based training, in-services, poster board presentations, and unit mentorships. As a result of successfully

implementing this education plan, patients and health care professionals alike will be informed and motivated to fulfill their role in reducing the prevalence of SSIs.

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