



## The Use of Audiovisual Aids for Patient Education in the Interventional Radiology Ambulatory Setting: A Literature Review



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### A B S T R A C T

#### Keywords:

Patient education  
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Preoperative education

Ambulatory education holds its own unique challenges to patient education. The purpose of this literature review was to examine the effectiveness of audiovisual teaching methodologies used for patient education in the interventional radiology (IR) adult ambulatory population. This literature review included evidence-based literature, peer-reviewed articles, and clinical practice guidelines. The results of the literature review revealed positive outcomes in the use of visual aids during the education process. Individual studies showed improved information retention and increased patient satisfaction when audiovisual aids were used. Further study is needed to broaden the scope of research in the use of audiovisual aids during education in the IR ambulatory setting and best practices on educational tool development.

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### Problem identification

In the interventional radiology setting, the optimum goals of patient education encompass knowledge dissemination of disease processes, the procedure or treatment the patient is undergoing, and any preprocedural and postprocedural instructions. This is challenging in an area that has short timeframes to educate patients and their families (Bastable, 2008). The physical readiness of the patient, including mental stress related to an acute disease process, new diagnosis, or invasive procedure combined with a distracting environment are all challenges to overcome in the ambulatory setting (Bastable, 2008). Time constraints often do not allow for patient anxiety and stress to be resolved, which hinders information retention (Kaur et al., 2016). Moreover, those with low numeracy or literacy skills have difficulty understanding health-related concepts such as treatment risks (Garcia-Retamero & Galesic, 2010).

### Purpose of study

The purpose of the integrative literature review was to investigate innovative audiovisual methods used for effective education that encompasses time and cost management. The study was designed to discover educational aids that can be used within the interventional radiology setting. The review examined the use of visual aids in the improvement of patient outcomes, patient satisfaction, and overall understanding of the disease process and procedures. Specific topics developed within the study included audiovisual aids for education, factors specific to the adult and elderly population, patient and staff perceptions, and the influences of numeracy and literacy levels.

### Methodology

A comprehensive review of the literature was performed to analyze existing evidence on the impact of audiovisual aids on patient education in the ambulatory setting. The theoretical framework used in the literature review was the Social Cognitive Theory (Bastable, 2008). The search process took place over an 8-month period using online search platforms. Articles were limited to full-text documents in English with authored dates that ranged from the year 2010 to 2016. The included 16 articles involved audiovisual aids at the center of their study. These 16 articles encompassed the adult population within, or similar to,

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patients in the interventional radiology setting such as patients with same day procedures or ambulatory cancer treatments. Articles specific to audiovisual education, such as pictograms with the intent to relay health-care information, were also included. Articles outside the radiology or interventional procedure setting, older than an 8-year timeframe, or focused on a pediatric population were excluded. Table 1 provides a summary of the content inclusive of the literature review.

#### Audiovisual Aids for Education

The studies reviewed focused on audiovisual aids for education while addressing health literacy and numeracy, development and delivery methodologies, and staff perceptions of the developed education. The importance of providing education at the appropriate level for the patient was a recurring theme found in several of the articles.

Findings from a study by Garcia-Retamero and Galesic (2010) demonstrated that educational format can potentially improve comprehension of risks, increase risk avoidance, and promote healthy behaviors, even in those with low health literacy or numeracy skills. In addition, Culp (2015) reported strategies to improve patient comprehension, such as providing literature at the appropriate reading level and tailoring communication to the needs and level of the individual. Berthenet, et al. (2016) evaluated pictograms based on comprehension in the elderly population. The study determined that visual aids improved comprehension but could be misleading, thereby necessitating separate validation of pictograms in the elderly population.

Methodologies for development and delivery of audiovisual materials were found as a theme in nine of the development articles. Kuhrik and McCarthy (2010) developed strategies in a cancer center to maximize availability of information such as written materials and speaker session information disseminated on flyers, posters, and facility website. Speaking sessions offered to patients before or after appointments in waiting rooms and “high-traffic areas” increased participation (Kuhrik & McCarthy, 2010). Agaj (2016) reflected on the use of audiovisuals to advance learning quality in the educational setting. Students agreed that using audiovisuals have a positive impact on raising the quality of teaching as well as providing stimulation and a more relaxed learning environment.

Patients who do not retain preprocedural education experience anxiety and have less favorable outcomes according to Gadler, et al. (2016), who developed a take-home video and studied the effects of preprocedural anxiety and knowledge retention. The experimental group that received the video in conjunction with traditional education reported less worry and anxiety before the procedure, demonstrated improved knowledge and satisfaction, and exhibited a significant reduction in provider time during follow-up appointments.

Kaur et al. (2016) investigated patient satisfaction with educational methods that used digital videos in the ambulatory surgery setting where patient anxiety may not be properly addressed and education retention can suffer. Patient satisfaction scores and

information retention were assessed and demonstrated higher information retention, less anxiety, and a significantly higher satisfaction after the educational video. A study by Dash et al. (2016) evaluated the effects of an animated video, and after review, the study established that audiovisuals are especially helpful in adult learning, promoting formation of concepts. Video quality, clarity of audio, and the logical flow of information are paramount for the ability of the aid to assist in learning for adults (Dash, et al. 2016).

Two of the studies delved into newer branches of audiovisual aid research and the impact the material quality and purpose of use may possess. In a study by Stribling and Richardson, (2016) eight tablets preloaded with relevant health information were distributed in 2 clinic waiting areas with internet searching capabilities. Findings suggested that those in the waiting area felt more educated, reported increased satisfaction, and preferred PowerPoint and video clips to static reading files. In a study by Marsdin et al. (2012), a hypothesis that audiovisual distraction could reduce perceived pain during lithotripsy was tested with results finding the measures of pain perception statistically lower in addition to a reduced procedural distress score (Marsdin et al. 2012). This study demonstrates the effectiveness and versatility audiovisual aids possess.

#### Adult and Elderly Population

Although the preponderance of articles focused on the adult and elderly population, 4 articles focused on potential interventions in this population. Berthenet et al. (2016) developed a study, in which participants interpreted the meaning of pictograms, finding that visual aids used incorrectly can be misleading. Moreover, poor health literacy may particularly limit an elderly person's ability to comprehend written or verbal medication information and the ability to successfully adhere to medical regimens, leading to poor patient outcomes (Berthenet et al. 2016). The different effects of visual aids and pictograms on the adult and elderly population were examined by Garcia-Retamero and Galesic (2010) and revealed that visual aids were useful in explaining absolute and relative risk reduction.

A meta-analysis reviewed the effects of audiovisual aids on informed consent with recommendations made for greater use of audiovisual aids in addition to ensuring materials are adapted to an appropriate reading level (Farrell et al., 2014). The study by Garcia-Retamero and Hoffrage (2013) sought to find the extent visual aids can improve information exchange beyond natural frequencies and found visual aids can improve comprehension of risks, encourage risk avoidance, and promote healthy behaviors. Visual aids were most useful in those with low literacy skills but can intentionally or unintentionally direct a person, with the older less educated population most vulnerable (Garcia-Retamero & Hoffrage, 2013).

#### Patient and Staff Perceptions

Most studies did take into consideration patient perceptions or satisfaction of education to some extent, but 2 studies examined with an in-depth look at patient perceptions to the use of visual aids

**Table 1**  
Summary of literature review

Theoretical concepts	Journal articles and periodicals	Books, magazines, and so forth	Total resources	Resources before 2011	Resources within 5 y	Percent since 2011, %
Audiovisual aids for education	13	1	14	2	9	85.7
Adult/elderly populations	11	1	12	2	8	84.6
Patient/staff perceptions	12	0	12	2	6	83.3
Numeracy/literacy influences	5	1	6	1	3	80.0

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