Health literacy is recognized as an integral component of high-quality health care. However, health literacy has been understudied in the context of cancer care delivery and surgical decision making. The goal of this article is to outline a process for implementation of a health literacy screening assessment within the routine practices of an academic breast surgical oncology clinic. The self-reported health literacy assessment is feasible, particularly with integration of the health literacy screen in the electronic health record. The authors’ estimated clinic prevalence of low health literacy was 22%, which has numerous implications for communication and shared decision-making processes.

AT A GLANCE
- Patients with low health literacy may be at risk for impaired treatment decision making in busy clinical settings.
- Health literacy assessment and screening is necessary to provide patient-centered interventions.
- Clinical assessment of health literacy and integration within the electronic medical record is feasible in the outpatient surgical oncology setting and has numerous implications for enhanced shared decision making for limited-literacy populations.

Health literacy assessment and integration within the electronic medical record is an integral component of high-quality health care. In adults, limited health literacy can be a critical indicator of adverse health outcomes, such as diminished health-related knowledge, increased measures of morbidity, poor adherence to medication regimens, and high use of healthcare resources (DeWalt, Berkman, Sheridan, Lohr, & Pignone, 2004). An estimated 20%-36% of all adults in the United States have limited health literacy, and that prevalence rises to closer to 50% among those who are also from a low-income background (Nielsen-Bohman, Panzer, & Kindig, 2004). DeWalt et al. (2004) demonstrated that adult patients with limited health literacy are less likely to participate in shared medical decision making and are more likely to experience shame, low self-esteem, and limited social support.

Although it has been understudied, health literacy is particularly important in the context of patients navigating through cancer treatment and surgical decision-making. Han, Huh, Kim, Kim, and Nguyen (2014) assessed the relationship of health literacy to breast screening and found that patients with limited health literacy do not follow recommended screening practices. Patients with limited health literacy may have difficulty when relying on written clinical materials that often are provided in the context of patient appointments, providing informed consent for treatment and clinical trial participation, and acting on potentially serious complications of their treatment (Cox, Bowmer, & Ring, 2011).

To date, few assessments have been conducted on the prevalence of limited health literacy in specific oncology populations. To the authors’ knowledge, only one previously reported quality report described the measurement of health literacy in a surgical clinic (Komenaka et al., 2014), and that assessment did not include electronic health record (EHR) integration. Surgical oncology clinics, in particular breast oncology clinics, are a particularly important place to implement screening practices for limited health literacy because of the complex decision-making processes that often follow diagnosis and initial consultation. This article describes a health literacy screening implementation process and provides initial clinic-based prevalence estimates of health literacy at a breast surgical oncology practice in an academic medical center.

Implementation Considerations

Instrument Selection

Numerous health literacy assessments have been developed, validated, and used among chronically ill, well, and diverse populations (Rudd, Jennie, Anderson, & Nath, 2007). The Test of Functional Health Literacy in Adults (TOFHLA) and the Rapid Estimate of Adult Literacy (REALM) are both considered gold standards of health literacy assessments, but...
the measures are based on word recognition and have been criticized regarding the potential for patient embarrassment and stigma and a lack of cultural sensitivity (Chew, Bradley, & Boyko, 2004). Subsequently, various measures have been developed to assess concepts such as numeracy (e.g., Newest Vital Sign) and electronic health literacy (e.g., eHEALS) (Norman & Skinner, 2006; Shah, West, Bremmeyer, & Savoy-Moore, 2010). Overall, the measures were developed with the intent to measure health literacy in research studies and have been criticized for their length and inability to be implemented in clinical environments where a brief screening approach is more useful (Chew et al., 2004). In addition, these measures may be difficult to administer to Spanish-speaking populations because of interpretation needs (Sarkar, Schillinger, López, & Sudore, 2011).

Chew et al. (2004) developed a brief, three-item, self-report health literacy assessment to limit stigma and participant burden. The brief assessment (Set of Brief Screening Questions) has been validated against the TOFHLA, and can discriminate English and Spanish speakers with adequate health literacy from those with inadequate health literacy (concordance index = 0.82) and inadequate plus marginal health literacy (concordance index = 0.81) (Sarkar et al., 2011). The three questions contain a self-assessment rating on a Likert-type scale ranging from 1 (extremely) to 5 (not at all). The questions are the following:

■ How confident are you in filling out medical forms?
■ How often do you have problems learning about your medical condition(s) because of difficulty understanding written information?
■ How often do you have someone help you read hospital materials?

Patients who have a total score of 9 or greater on the questionnaire can be classified as having limited health literacy, patients with scores of 7–8 can be classified as marginal health literacy, and patients with a score of 6 or lower can be classified as adequate health literacy (Sarkar et al., 2011). Participants in the limited and marginal health literacy groups can further be classified as having low health literacy.

Integration With Paperwork and the Electronic Medical Record

Institutional review board approval was sought to maintain a health literacy database for quality improvement, clinical operation, and research purposes. The authors attached a paper version of the three-question assessment (in English and Spanish) to the initial visit questionnaire at their clinic and also assessed health literacy during follow-up visits. Each patient completed the brief self-assessment, which was then reviewed by the nurse coordinator, nurse practitioner, resident physician, and attending physician during review of all intake elements. To maintain a record of health literacy assessment in the context of clinic operations, a template was developed that mirrored the paper assessment, and it was added to clinic visit progress notes in the EHR. The health literacy assessment was implemented in the clinic for 14 months (from May 2015 to July 2016) to assess the feasibility of using this measure to assess for limited health literacy and estimate the prevalence of limited health literacy in patients with breast cancer prior to tailoring breast cancer education materials for limited health literacy populations. During the 14 months, 683 patients with either newly diagnosed breast cancer or those coming in for follow-up visits were assessed (see Table 1).

Discussion

In a published historical pooled meta-analyses of 31,000 patients in 85 studies, which may lead to the higher pooled prevalence ratings among previously published studies.

Lower health literacy is consistently associated with more hospitalizations, greater use of emergency care, lower receipt of preventive measures (e.g., immunizations), lower receipt of screening measures (e.g., mammography), poorer ability to decipher medication instructions and health labels, and poorer ability to interpret health messages (Berkman et al., 2011). In some populations, lower health literacy conveys poorer overall health status and increased mortality, and poor health literacy has explained racial disparities among certain health outcomes (Berkman et al., 2011; DeWalt & Hink, 2009; Keim-Malpass, Letzkus, & Kennedy, 2015; Volandes et al., 2008). The majority of literacy studies have contextualized the

"Patients with limited health literacy are more likely to experience shame and low self-esteem."

Patients with limited health literacy are more likely to experience shame and low self-esteem."
Table 1.
Characteristics of Health Literacy Screening (N = 683)

<table>
<thead>
<tr>
<th>Measure</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-clinic health literacy assessment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete</td>
<td>587</td>
<td>86</td>
</tr>
<tr>
<td>Incomplete/missing in EHR</td>
<td>96</td>
<td>14</td>
</tr>
<tr>
<td>Measure of health literacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate</td>
<td>531</td>
<td>78</td>
</tr>
<tr>
<td>Marginal</td>
<td>77</td>
<td>11</td>
</tr>
<tr>
<td>Limited</td>
<td>75</td>
<td>11</td>
</tr>
</tbody>
</table>

EHR—electronic health record

Conclusion

The measure and integration of health literacy as a quality assessment strategy has been understudied in cancer care delivery settings. Health literacy assessment and integration in the EHR is feasible and can be incorporated to tailor communication strategies. Health literacy offers a novel point of intervention within a vulnerable patient population.

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The authors take full responsibility for this content and did not receive honoraria or disclose any relevant financial relationships.

References


A new cancer diagnosis (e.g., during times of patient uncertainty) and during times of enhanced stress (e.g., after the point of intervention within a vulnerable patient population. The measure and integration of health literacy as a quality assessment strategy has been understudied in cancer care delivery settings. Health literacy assessment and integration in the EHR is feasible and can be incorporated to tailor communication strategies. Health literacy offers a novel point of intervention within a vulnerable patient population.

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Health literacy has been understudied in the context of cancer care delivery and shared decision making for cancer treatments (Morris et al., 2013). Surgical-oncology is a clinical area where assessment of health literacy is feasible, and clinicians are in a unique position to apply best practices for patients with low health literacy using evidence-based oral and written communication strategies (Ballard & Hill, 2016). In addition, this type of assessment can and should be incorporated into the patient’s EHR so other specialty and primary care providers can access this information.

Modalities such as the use of plain language, written communications and drawings that use plain language, and the use of teach-back (where a patient performs return demonstrations or gives a summary of the conversation) are all strategies that can be tailored for patients with low health literacy (Ballard & Hill, 2016). In addition, integration with nurse care coordination and enhanced navigation may be particularly useful for patients with low health literacy (Ballard & Hill, 2016). These tailored measures are critical during times of enhanced stress (e.g., after a new cancer diagnosis) and during times of patient uncertainty (e.g., during shared surgical decision making).