A Scoping Review on How to Make Hospitals health Literate Healthcare Organizations

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Abstract: The concept of health literacy is increasingly being recognised as not just an individual trait, but also as a characteristic related to families, communities, and organisations providing health and social services. The aim of this study is to identify and describe, through a scoping review approach, the characteristics and the interventions that make a hospital a health literate health care organisation (HLHO), in order to develop an integrated conceptual model. We followed Arksey and O’Malley's five-stage scoping review framework, refined with the Joanna Briggs Institute methodology, to identify the research questions, identify relevant studies, select studies, chart the data, and collate and summarize the data. Of the 1532 titles and abstracts screened, 106 were included. Few studies have explored the effect of environmental support on health professionals, and few outcomes related to staff satisfaction/perception of helpfulness have been reported. The most common types of interventions and outcomes were related to the patients. The logical framework developed can be an effective tool to define and understand priorities and related consequences, thereby helping researchers and policymakers to have a wider vision and a more homogeneous approach to health literacy and its use and promotion in healthcare organizations.

Keywords: health literacy; health literate healthcare organizations; hospital; health equity; logical framework

1. Introduction

Health literacy (HL) is a multidimensional concept that has been developed since the 1970s [1], moving from an individual to a public health perspective [2]. In one of its definitions, HL is described as the degree to which individuals can obtain, process, and understand the basic health information and services they need to make appropriate health decisions [3]. Thus, given that health has biological, psychological, and social determinants, HL is increasingly being recognised as not just an individual trait, but also as a characteristic related to families, communities, and organisations providing health and social services [4]. For this reason, attention has also shifted to the specific context in which care is provided: patients’ abilities to understand medical information and navigate care-seeking processes are in fact related to the demands that the health delivery systems place on them, and the specific organizational context in which care is provided may contribute to compensating for patients’ limited HL [5–7].
The concept of health literate health care organisations (HLHOs) is proposed to assess health care organization performance with patients’ HL issues. This kind of organization will make it easier for people to navigate, understand, and use information and services to take care of their health.

Brach et al. propose ten specific attributes (see Table 1) of HLHOs [8]. Specifically, the ten attributes of an HLHO have been described, as reported in Table 1.

**Table 1.** Ten attributes to the health literate health care organizations (HLHOs), according to the Institute of Medicine (IOM) [8].

| An HLHO |
|-----------------------|
| Has leadership that makes health literacy integral to its mission, structure, and operations. |
| Integrates health literacy into planning, evaluation measures, patient safety, and quality improvement. |
| Prepares the workforce to be health literate and monitors progress. |
| Includes populations served in the design, implementation, and evaluation of health information and services. |
| Meets the needs of populations with a range of health literacy skills while avoiding stigmatisation. |
| Uses health literacy strategies in interpersonal communications and confirms understanding at all points of contact. |
| Provides easy access to health information and services, as well as navigation assistance. |
| Designs and distributes print, audiovisual, and social media content that is easy to understand and act on. |
| Addresses health literacy in high-risk situations, including care transitions and communications about medicines. |
| Communicates clearly what health plans cover and what individuals will have to pay for services. |

Facing such attributes, many authors have proposed health literacy intervention toolkits for health care organizations [9,10], as well as correlated measurement tools [11–13]; however, to date a systematisation of the conceptual model based on the experiences described in the literature is still lacking.

The aim of this study is to identify and describe, through a scoping review approach, the characteristics and the interventions that make a hospital an HLHO, according to the definition of Brach et al. [8], in order to develop an integrated conceptual model capturing the most comprehensive framework of HLHOs.

The research has been restricted to hospitals instead of examining all health care settings, due to the low variability of this type of setting between different countries.

2. Materials and Methods

We followed Arksey and O’Malley’s five-stage scoping review framework [14], refined with the Joanna Briggs Institute methodology [15], in order to (1) identify the research questions, (2) identify relevant studies, (3) select studies, (4) chart the data, and (5) collate and summarize the data.

2.1. Identifying the Research Questions

The first step in the process of conducting a scoping literature review is to determine the research questions to be addressed in the study. The research question addressed in this review was based on the PCC (population–concept–context) model of the Joanna Briggs Institute [15]: “What interventions and what outcomes are pursued in health literate hospitals?” where HLHO is defined as described in the introduction [8].
2.2. Identifying Relevant Studies

The search strategy on Pubmed and Web of Science was built by selecting groups of keywords for each part of the PCC. Each group was combined to others through the Boolean operator AND (Table 2).

| Strings                                                                 | Database               |
|------------------------------------------------------------------------|------------------------|
| ("health literacy" AND implementation) OR ("Health Literacy/nursing") OR "Health Literacy/organization and administration") OR "Health Literacy/utilization") OR "health literate" OR "health literacy" AND (organizat * OR organisat *) AND ("hospitals"[MeSH Terms] OR "hospitals"[All Fields] OR "hospital"[All Fields] OR hospital * OR "health facility *" OR "Health Facilities"[Mesh]) | Pubmed                  |
| ("health literacy" AND implementation) OR ("Health Literacy" AND nursing) OR ("Health Literacy" OR "health literate") AND (organizat * OR administrat * OR utilizat *)) AND (hospital * OR "health facility *") | WoS, Cinahl, Scopus, Pscyinfo |
| "health literacy" OR "health literate"                               | Sociological Abstract  |

Database searches were also conducted in other four adjunctive databases: Cinahl, Scopus, Pscyinfo, and Sociological Abstract. The last search was completed on 1 July 2019. No date limits were applied.

2.3. Selecting Articles

Two reviewers performed the data extraction and appraisal independently, with an a priori study protocol. The study protocol included the following requirements:

- Only primary studies, systematic reviews, and meta-analyses were considered.
- Studies should be focused on hospitals.
- They must describe any intervention and outcome that concerns one or more of the ten attributes of HLHOs, as follows:

  - Attribute 1 (leadership): studies whose aim was to involve leadership or to assess the effect of leadership involvement;
  - Attribute 2 (planning): interventions whose aim was to introduce or test the effect of planning activities related to health literacy. This also includes every intervention aimed at developing or using tools/instruments for assessing organizational health literacy;
  - Attribute 3 (workforce): every intervention could evaluate the impact of health literacy training on healthcare workers (HCWs), or whose aim was to develop, change, or adopt health literacy training;
  - Attribute 4 (population): studies whose aim was to include the population in the design, implementation, and evaluation of health information and services, or every study assessing the effects of population engagement;
  - Attribute 5 (meets the needs of the population): studies whose purpose was to assess the effect of interventions that meet “the needs of populations with a range of health literacy skills while avoiding stigmatization”;
  - Attribute 6 (communication): studies whose aim was to implement a communication technique or that assess the effect of implementing communication techniques;
  - Attribute 7 (navigation): studies whose aim was to implement or evaluate the impact of interventions to provide easy access to health information, both in the physical and electronic environment;
  - Attribute 8 (contents easy to understand): every study whose aim was to assess the suitability of materials for their target audience or the impact of the development/use of suitable material;
 Attribute 9 (high-risk situations): every study where the intervention or outcomes were related to high-risk situations, such as informed consent for surgery, administration of medicines, advanced directives, and transitions in care, such as discharge from the hospital.

 Attribute 10 (payment transparency): studies whose aim was to clarify communications about health service costs to patients or evaluate the impact of interventions that make communications about insurance coverage and costs more transparent.

All electronic database search results were combined in Endnote, and duplicate records were removed. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram guidance was used to display studies that were identified by the database search and met the inclusion and exclusion criteria (Figure 1).

**Figure 1.** Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram.

In accordance with the standard approach to conducting scoping reviews, a quality appraisal was not performed.

2.4. Charting the Data

To answer the research questions, we created a data charting form in Excel with the following elements: authors, year of publication, country of the study, study design, sample characteristics, aim of the study, conclusions, related HLHO attributes, interventions, and outcome measures (Appendix).

2.5. Collating, Summarising, and Reporting the Results

We used information from the data charting form to summarize the overall number of studies, years of publication, countries where studies were conducted, and the focus and purpose of the studies.

The charted interventions were grouped into three categories, and each category was divided into two subcategories:
• Support for patients: every intervention was designed to help patients access and use health information better. Patients may receive support directly by health professionals (staff support) or by material, electronic tools, conditions, and objects belonging to the hospital’s structure (environmental support);
• Support for staff: interventions aimed at facilitating health professionals in helping patients. This can be achieved by health literacy training, or by tools/technologies/environments that improve the healthcare worker–patient relationship.
• Support for governance: interventions designed to better evaluate and manage system efforts in becoming an HLHO. This includes all the interventions aimed at developing tools/instruments for assessing organizational health literacy, as well as quality improvement actions related to health literacy: establishing measures, setting aims, specific assessment analysis, forming teams, communicating awareness, developing health literacy improvement plan, testing changes, and tracking progress.

Outcomes were also grouped into categories and subcategories:

• Patient outcomes: divided into changes in knowledge/skills/behaviors, perception of intervention satisfaction, and patient health outcomes.
• Staff outcomes: including perception of intervention satisfaction and changes in knowledge/skills/behaviors.
• System outcomes: including changes in the scores for tools that assess organizational health literacy, the quality improvements perceived/obtained, measures of validation for the tools developed, and costs.

The research group, with the contribution of a sociologist, developed a theoretical logical framework for a generic healthcare organization and combined it with interventions and outcomes to better synthetize the data. A logical framework is a diagram mapping out a chain of hypothesized causal relationships and providing a structure to describe the interventions that are available to reach specified public health goals [16]. The purpose of a logical framework is organizing, grouping, and selecting the interventions for the health issues under consideration, and for choosing the outcomes used to define the success of each intervention [17].

3. Results

Figure 1 shows the article selection. Of the 1532 titles and abstracts screened, 106 were included, of which 97 were primary studies and 9 were systematic reviews. Among the primary studies, 24 were randomized controlled trials, 42 were quasi-experimental studies, 19 were descriptive studies, and 12 were validation studies. The majority (70%) of the selected primary studies were performed in the United States, followed by Europe (13%), Australia (6%), Canada (3%), and others (6%).

In Tables 3 and 4, respectively, the interventions and outcomes divided into subcategories are summarized.
### Table 3. Interventions (see supplementary file for more detail).

| Intervention        | Subcategories                                      | Code | Ref.          | N. of Studies |
|---------------------|----------------------------------------------------|------|---------------|---------------|
|                     | Environmental                                      | 1a   | 18–83         | 66            |
| Support for patient | Environmental                                      | 1b   | 41, 49, 51, 61, 63, 66–68, 75, 80, 82–99 | 35            |
|                     | Staff                                              |      | 19, 21, 24, 29, 30, 34, 28, 40, 66       |               |
|                     | Training                                           | 2a   | 67, 80, 100–109 | 12            |
| Support for staff   | Environmental                                      | 2b   | 50, 64, 67, 68, 76, 110                   | 6             |
|                     | Developing/usig tools/instruments for assessing    | 3a   | 11, 108, 111–118 | 10            |
|                     | organizational health literacy                     |      |               |               |
|                     | Actions for quality improvements                   | 3b   | 50, 111, 116, 119–122                      | 7             |

### Table 4. Outcomes (see supplementary file for more detail).

| Target              | Subcategories                                      | Code | Ref.          | N. of Studies |
|---------------------|----------------------------------------------------|------|---------------|---------------|
| Patient             | Knowledge/skills/behaviour                         | 1a   | 18, 22–27, 29–33, 35–38, 40–44, 46, 47, 49–55, 57, 59–61, 63, 65, 66, 68, 70, 75–83, 87, 88, 93, 95, 96, 121, 122 | 57            |
|                     | Satisfaction/acceptability/helpfulness/            | 1b   | 20–22, 28, 30, 31, 47, 48, 54, 56, 59, 63, 67, 73, 79, 81, 84, 85, 94, 106, 107, 117, 120 | 23            |
|                     | Patient health outcomes                            | 1c   | 19, 27, 34, 37, 41, 45, 63, 66, 71, 76, 80, 86, 87, 89–93, 97–99 | 22            |
| Staff               | Knowledge/skills/behaviour                         | 2a   | 38, 64, 67, 68, 101–103, 105, 108–110, 122 | 12            |
|                     | Staff perception of satisfaction/helpfulness        | 2b   | 23, 100–104                                           | 6             |
|                     | Assessment tools scores (organisation)             | 3a   | 84, 94, 11, 116, 117, 121                            | 11            |
| System              | Quality improvements perceived/gained              | 3b   | 108, 111, 116, 118, 119, 122 | 6             |
|                     | Validation/feasibility/usability/usability          | 3c   | 39, 58, 69, 72, 114, 117                           | 8             |
|                     | Costs                                              | 3d   | 40, 80, 98                                            | 3             |

3.1. Interventions (See Table 3 for References)

The majority of studies investigate the effects of interventions that support patients. A total of 66 [18–83] have investigated environmental support. This includes both material support (informative brochures, flyers, or pamphlets) and digital technology (software/apps) for patient education or to help patients to better access or manage their health information. Thirty-five studies investigated the effects of staff interventions in helping patients by describing interventions aimed at educating or helping patients in their healthcare pathways, such as during medical reconciliations and follow-ups. Only 15 studies examined the effect of interventions targeting hospital staff. Most of them (12) were related to health literacy training programs to improve staff communication skills,
and six examined interventions to help doctors create easily understandable material, such as templates for discharge instructions.

Fifteen studies examined interventions to support hospital governance: 10 illustrate the development and use of instruments or tools for assessing organizational health literacy, while 7 sought to evaluate quality improvements such as health literacy interventions and activities.

3.2. Outputs/Outcomes (See Table 4 for References)

The most common outcome was a change in knowledge/skill/behaviour of patients (57 studies); twenty-three studies used subjective outcomes, such as perceptions of satisfactions and helpfulness, and 22 studies reported patient health outcomes. Only 15 studies used staff outcomes: 12 for changes in knowledge/skill/behaviour, and 6 for subjective perceptions. Fifteen studies have analysed system outcomes: 11 of these have utilized scores of tools for conducting organizational assessments, 6 have measured quality improvement changes, 8 have measured the validity of particular tools developed by the organization, and 3 have evaluated the costs related to the interventions.

3.3. Attributes (See Table 5 for References)

The most common attribute investigated was the eighth (with 67 studies, followed by attribute 9 with 53 studies and 7 with 36 studies). No study was found to be related to attribute 10. Attribute 5 is very generic, so it can be included in any of the remaining nine attributes. This will be further explained in the discussion section. Only 18 studies (see Supplementary File for references) analysed a single attribute.

| N | Description                          | No. of Studies | Ref.                  |
|---|--------------------------------------|----------------|-----------------------|
| 1 | Leadership                           | 7              | 65, 105, 106, 111, 114–116 |
| 2 | Planning                             | 19             | 11, 69, 72, 73, 88, 94, 106, 107, 110–117, 119, 121, 122 |
| 3 | Workforce                            | 13             | 67, 80, 94, 100–107, 109, 110 |
| 4 | Population                           | 10             | 11, 28, 38, 42, 50, 56, 58, 59, 67, 118 |
| 5 | Meets the needs of the population    | 0–106          | *                     |
| 6 | Communication                        | 25             | 19–21, 24, 28, 30–32, 34, 36, 40, 46, 48, 53, 54, 56, 93, 94, 96, 99–102, 104, 107, 109 |
| 7 | Navigation                           | 36             | 57, 58–60, 63, 68, 72, 82, 84, 86, 87, 89, 90, 97–99, 112, 121, 122 |
| 8 | Contents easy to understand          | 67             | 18–20, 22–33, 35–45, 47, 49–58, 60–67, 69, 70, 72–83, 90, 93, 110, 112, 118, 120–122 |
| 9 | High-risk situations                 | 53             | 54, 59, 61–68, 74–76, 80, 82–88, 90–93, 95, 96, 98, 99, 113, 119 |
| 10| Payment transparency                | 0              | /                     |

* further explained in the Discussion section.

3.4. Logical Framework (Figure 2)

The logical framework developed depicts the relationship between the HLHO and its intended effects on patient health outcomes. It is composed of the determinants of an HLHO (health literacy definition, reference population, and features of the organization) and phases (governance, staff, and environment) that identify the ways in which HLHOS interact with patients. At the end of the logical framework, patient health outcomes are shown. However, this was not meant to be a definitive guide to the relationship between these components, because many of these relationships have not been
explicitly tested. Each phase has its own interventions and proximal outcomes (outputs) that define success for each intervention. Interventions and outputs, obtained by analysing the results of our literature search, were organized in a matrix linked to the phases. Governance interventions were applied only to the governance phase, while interventions of support staff and patients were applied to both the staff and environmental phases.

![Logical framework diagram](image)

**Figure 2.** Logical framework.

### 4. Discussion

In the years following its publication, the “Ten Attributes of Health Literate Health Care Organizations” has been used as both an assessment tool and a guidebook for building health literate organisations [10,123]. However, the 10 attributes have been criticized for being developed inductively and for lacking theoretical backing [124]. With our work, we have tried to overcome this issue by searching and analyzing the literature and building a logical framework to support the 10 attributes in defining an HLHO.

Most literature has investigated attributes 8 and 9, which combined together are related to the use of educational material and are strictly related to the environmental phase of our logical framework. No study was found to be related to the 10th attribute. This could be because patients do not have to pay for services in every health care system. However, in our review, the majority of studies were set in the United States. Clear communication of costs for patients is not considered to be an issue related to health literacy. In addition, our work evidenced that the majority of interventions belonged to two or more attributes. The cause of this is to be found in some redundancies related to the 10 attributes. The fifth attribute is a perfect example of how difficult it is to define the limits of the domains for each attribute. The description says that an HLHO “meets the needs of populations with a range of health literacy skills while avoiding stigmatization”. If the focus is meeting the needs of a population, then every intervention found in our review could belong to this attribute; on the contrary, when interventions focus on just avoiding stigmatisations, then no study could be related to this attribute. While this redundancy can be useful for broadly describing every aspect of an HLHO, it can generate confusion at a decision-making level. Thanks to our logical framework, it should be easier to identify and to determine to which area every type of intervention belongs. For instance, as described above, most literature reports interventions and outcomes related to attributes 8 and 9, but this does not give enough information about the context they refer to. Analyzing our results using our logical framework, we can clearly see that the vast majority of
research has investigated the role of interventions to support patients, while focusing on environmental content that is easy to understand and act on. For this reason, the most common types of outcomes reported were related to the patients—in particular, changes in knowledge, skill, and behaviour. However, this process includes, for the most part, materials related to patient education, and no study was found on navigation issues in the physical environment of a hospital, even though navigation was first raised as a health literacy problem out of concern for the complexity of health care facilities and their poor signage. There are many interventions, like using color coded pathways, standardizing plain language directions, having volunteer escorts, and posting directions in commonly used languages and navigation apps [125], but we did not find any studies that evaluated their effects.

In addition, a reasonable number of patient health outcomes were investigated, but they were all related to interventions to support patients. No study related to staff or governance intervention reported any kind of patient health outcomes.

Very few studies [50,64,67,68,76,110] have explored the effect of environmental support on health professionals, and few outcomes related to staff satisfaction/perception of helpfulness have been reported [23,100–104]. At the same time, studies examining interventions to support the governance of the organization, despite receiving more attention, often had methodological limitations, due to their weak study designs. As such, the generalizability of the findings from these studies was limited. For example, some of them were on using organizational health literacy assessment tools. While these tools were all pilot-tested for overall usability, none of them were clearly demonstrated to be reliable to measure improvement. In the literature, it is clear that limited health literacy is a significant factor associated with increased healthcare utilization and costs [126,127], and that meeting the needs of people with limited health literacy could produce savings of approximately 8% of the total costs for this population [127]. However, only three studies [40,80,98] reported “costs” as an outcome. Health organizations need resources and strategies to save staff time and costs [128]. It would be desirable to justify health literate interventions by linking them to saving staff time or reducing costs to convince more health organizations (including business-driven health organizations) to transform themselves to meet health literacy goals.

Our work has some limitations. First, we only take hospitals into account, and due to the characteristics of a scoping review, we did not evaluate the quality of studies. Consequently, this review cannot report the best intervention for a health organization wishing to become health literate. Our logical framework shows every group of interventions and related consequences reported by the literature so far. Hopefully, this would help researchers and policymakers to move beyond the single-intervention-based improvement mindset, and to implement groups of interventions for each area of the organization, making health literacy integral to all operations. When an organization sets a goal of becoming health literate, it replaces fragmented quality improvement activities with a systematic and comprehensive approach [129].

5. Conclusions

This scoping review identifies and describes the characteristics and the interventions that make a hospital an HLHO. So far, in the literature, little attention has been given to the effect of environmental support on health professionals, and few outcomes related to staff satisfaction/perception of helpfulness have been reported; the most common types of interventions and outcomes reported have been related to the patients.

We also build a logical framework here to support the 10 attributes in defining an HLHO, which, despite some limitations, can be an effective tool to better define and more specifically understand priorities and related consequences, thereby helping researchers and policymakers to have a wider vision and a more homogeneous approach to health literacy and its development in healthcare organizations.

Supplementary Materials: The following are available online at www.mdpi.com/xxx/s1, Table S1: Primary Studies; Table S2: Systematic Reviews.
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**References**

1. Simonds, S.K. Health education as social policy. *Health Educ. Monogr.* 1974, 2, 1–25.

2. Sørensen, K.; Van den Broucke, S.; Fullam, J.; Doyle, G.; Pelikan, J.; Slonska, Z.; Brand, H.; (HLS-EU) Consortium Health Literacy Project European. Health literacy and public health: A systematic review and integration of definitions and models. *BMJ Public Health* 2012, 12, 80, doi:10.1186/1471-2458-12-80.

3. Institute of Medicine. *Health Literacy: A Prescription to End Confusion*; National Academies Press: Washington, DC, USA, 2004.

4. Batterham, R.W.; Hawkins, M.; Collins, P.A.; Buchbinder, R.; Osborne, R.H. Health literacy: Applying current concepts to improve health services and reduce health inequalities. *Public Health* 2016, 132, 3–12, doi:10.1016/j.puhe.2016.01.001.

5. Baker, D.W. The meaning and the measure of health literacy. *J. Gen. Intern. Med.* 2006, 21, 878–883.

6. Nutbeam, D. The evolving concept of health literacy. *Soc. Sci. Med.* 2008, 67, 2072–2078.

7. Rudd, R.E.; Renzulli, D.; Pereira, A.; Daltory, L. Literacy demands in health care settings: The patient perspective. In *Understanding Health Literacy: Implications for Medicine and Public Health*; Schwartzberg, J.G., Van Geest, J.B., Wang, C.C., Eds.; AMA Press: Chicago, IL, USA, 2005.

8. Brach, C.; Keller, D.; Hernandez, L.M.; Baur, C.; Parker, R.; Dreyer, B.; Schyve, P.; Lemerise, A.J.; Schillinger, D. Ten Attributes of Health Literate Health Care Organizations; Institute of Medicine of the National Academies: Washington, DC, USA, 2012.

9. Batterham, R.W.; Buchbinder, R.; Beauchamp, A.; Dodson, S.; Elsworth, G.R.; Osborne, R.H. The OPtimising HEnalth LiterAcy (Ophelia) process: Study protocol for using health literacy profiling and community engagement to create and implement health reform. *BMJ Public Health* 2014, 14, 694, doi:10.1186/1471-2458-14-694.

10. Abrams, M.A.; Kurtz-Rossi, S.; Riffenburgh, A.; Savage BS, B. . *Building Health Literate Organizations: A Guidebook to Achieving Organizational Change*; UnityPoint Health: West Des Moines, IA, USA, 2014.

11. Kowalski, C.; Lee, S.Y.; Schmidt, A.; Wesselmann, S.; Wirtz, M.A.; Pfaff, H.; Ernstmann, N. The health literate health care organization 10 item questionnaire (HLHO-10): Development and validation. *BMJ Health Serv. Res.* 2015, 15, 47, doi:10.1186/s12913-015-0707-5.

12. Altm, S.V.; Lorrek, K.; Stock, S. Development and validation of a brief screener to measure the Health Literacy Responsiveness of Primary Care Practices (HLPC). *BMJ Fam. Pract.* 2015, 16, 122, doi:10.1186/s12875-015-0336-4.

13. Kripalani, S.; Wallston, K.A.; Cavanaugh, K.L.; Osborn, C.Y.; Mulvaney, S.; McDougald Scott, A.; Rothman, R. L. *Measures to Assess a Health Literate Organization Commissioned Report*; National Academy of Medicine: Washington, DC, USA, 2014. Available online: http://www.nationalacademies.org/hmd/~~/media/Files/Activity%20Files/PublicHealth/HealthLiteracy/Commissioned-Papers/Measures_Assess_HLO.pdf (accessed on 1 July 2019).

14. Arksey, H.; O’Malley, L. Scoping studies: Towards a methodological framework. *Int. J. Soc. Res. Methodol.* 2005, 8, 19–32.

15. Peters, M.D.J.; Godfrey, C.M.; McInerney, P.; Soares, C.B.; Khalil, H.; Parker, D. The Joanna Briggs Institute Reviewers’ Manual 2015: *Methodology for JBI Scoping Reviews*: Joanna Briggs Institute: North Australia, Adelaide, 2015.

16. Briss, P.A.; Zaza S.; Pappaioanou M.; Fielding J.; Wright-De Agüero L.; Truman B.I.; Hopkins D.P.; Mullen P.D.; Thompson R.S.; Woolf S.H.; Carande-Kulis V.G.; Anderson L.; Hinman A.R.; McQueen D.V.; Teutsch S.M.; Harris J.R. Developing an evidence-based guide to community preventive services—methods 1 2. *Am. J. Prev. Med.* 2000, 18, 35–43.

17. Zaza, S.; Carande-Kulis, V.G.; Sleet, D.A.; Sosin, D.M.; Elder R.W.; Shults R.A.; Dinh-Zarr T.B.; Nichols J.L.; Thompson R.S. Methods for conducting systematic reviews of the evidence of effectiveness and economic
efficiency of interventions to reduce injuries to motor vehicle occupants. Am. J. Prev. Med. 2001, 21(Suppl. S4), 23–30.

18. Bailey, S.C.; Sarkar U.; Chen A.H.; Schillingler D.; Wolf M.S. Evaluation of Language Concordant, Patient-Centered Drug Label Instructions. J. Gen. Intern. Med. 2012, 27, 1707–1713, doi:10.1007/s11606-012-2035-3.

19. Bell, S. P.; Schnipper, J. L.; Goggins, K.; Bian, A.; Shintani, A.; Kripalani, S. Effect of Pharmacist Counseling Intervention on Health Care Utilization Following Hospital Discharge: A Randomized Control Trial. J. Gen. Intern. Med. 2016, 31, 470–477, doi:10.1007/s11606-016-3596-3.

20. Bickmore, T.W.; Peifer, L.M.; Jack, B.W. Taking the time to care. In Proceedings of the 27th International Conference on Human Factors in Computing Systems—CHI 09, April 3–9, 2009, Boston, MA, USA doi:10.1145/1518701.1518891.

21. Cawthon, C.; Walia, S.; Osborn, C. Y.; Niesner, K. J.; Schnipper, J. L.; Kripalani, S. Improving Care Transitions: The Patient Perspective. J. Health Commun. 2012, 17(Suppl. S3), 312–324, doi:10.1080/10810730.2012.712619.

22. Choi, J.; Bakken, S. Web-based education for low-literate parents in Neonatal Intensive Care Unit: Development of a website and heuristic evaluation and usability testing. Int. J. Med. Inform. 2010, 79, 565–575, doi:10.1016/j.ijmedinf.2010.05.001.

23. Cordasco, K. M.; Asch, S. M.; Bell, D. S.; Guterman, J. J.; Gross-Schulman, S.; Ramer, L.; Elkayam, U.; Franco, I.; Leatherwood, C. L.; Mangione, C. M.A Low-Literacy Medication Education Tool for Safety-Net Hospital Patients. Am. J. Prev. Med. 2009, 37, 5209–5216, doi:10.1016/j.amepre.2009.08.018.

24. Dankner, R.; Drory, Y.; Geulayov, G.; Ziv, A.; Novikov, I.; Zlotnick, A. Y.; Moshkowitz, Y.; Elami, A.; Schwammenthal, E.; Goldbourt, U. A .A controlled intervention to increase participation in cardiac rehabilitation. Eur. J. Prev. Cardiol. 2014, 22, 1121–1128, doi:10.1177/2047487314548815.

25. Foertsch, L. Y.; Hoffmann, R. L.; Ren, D.; Stolar, J.; Tuite, P. K. Evaluation of a Surgical Site Discharge Teaching Tool Using Pictures and a Mirror. Clin. Nurse Spec. 2016, 30, 101–105, doi:10.1111/jnurs.12018.

26. Gallagher, R.; Roach, K.; Belshaw, J.; Kirkness, A.; Sadler, L.; Warrington, D.A pre-test post-test study of a brief educational intervention demonstrates improved knowledge of potential acute myocardial infarction symptoms and appropriate responses in cardiac rehabilitation patients. Aust. Crit. Care 2013, 26, 49–54, doi:10.1111/aacc.2012.01.002.

27. Herman, A.; Young, K. D.; Espitia, D.; Fu, N.; Farshidi, A. Impact of a Health Literacy Intervention on Pediatric Emergency Department Use. Pediatr. Emerg. Care 2009, 25, 434–438, doi:10.1097/pec.0b013e3181ab78c7.

28. Hopmans, W.; Damman, O. C.; Timmermans, D. R.; Haasbeek, C. J.; Slotman, B. J.; Senan, S. Communicating cancer treatment information using the Web: Utilizing the patient’s perspective in website development. BMC Med. Inform. Decis Mak. 2014, 14, doi:10.1186/s12911-014-0116-4.

29. Hu, H.; Wu, F.-L. L.; Hu, F.-C.; Yang, H.-Y.; Lin, S.-W.; Shen, L.-J. Effectiveness of Education Programs about Oral Antibiotic Suspensions in Pediatric Outpatient Services. Pediatr. Neonatol. 2013, 54, 34–42, doi:10.1016/j.pedneo.2012.10.002.

30. Huang, C.-H. S.; Crowther, M.; Allen, R. S.; DeCoster, J.; Kim, G.; Azuero, C.; Ang X.; Kvale, E. A Pilot Feasibility Intervention to Increase Advance Care Planning among African Americans in the Deep South. J. Palliat. Med. 2016, 19, 164–173, doi:10.1089/jpm.2015.0334.

31. Jibaja-Weiss, M. L.; Volck, R. J.; Granchi, T. S.; Neff, N. E.; Robinson, E. K.; Spann, S. J.; Aoki, N.; Friedman L. C.; Beck, J. R. Entertainment education for breast cancer surgery decisions: A randomized trial among patients with low health literacy. Patient Educ. Couns. 2011, 84, 41–48, doi:10.1016/j.pec.2010.06.009.

32. Joseph, G.; Beattie, M. S.; Lee, R.; Braithwaite, D.; Wilcox, C.; Metrikin, M.; Lamvik, K.; Luce, J. Pre-counseling Education for Low Literacy Women at Risk of Hereditary Breast and Ovarian Cancer (HBOC): Patient Experiences Using the Cancer Risk Education Intervention Tool (CREdit). J. Genet. Couns. 2010, 19, 447–462, doi:10.1007/s10897-010-9303-3.

33. Kheir, N.; Awaisu, A.; Radoui, A.; El Badawi, A.; Jean, L.; Dowse, R. Development and evaluation of pictograms on medication labels for patients with limited literacy skills in a culturally diverse multiethnic population. Res. Soc. Adm. Pharm. 2014, 10, 720–730, doi:10.1016/j.sapharm.2013.11.003.

34. Kripalani, S. Effect of a Pharmacist Intervention on Clinically Important Medication Errors After Hospital Discharge. Ann. Intern. Med. 2012, 157, 1, doi:10.7326/0003-4819-157-1-201207030-00003.
35. Kripalani, S.; Robertson, R.; Love-Ghaffari, M. H.; Henderson, L. E.; Praska, J.; Strawder, A.; Katz, M. G.; Jacobson, T. A. Development of an illustrated medication schedule as a low-literacy patient education tool. *Patient Educ. Couns.* **2007**, *66*, 368–377, doi:10.1016/j.pec.2007.01.020.

36. Kuppermann, M.; Pena, S.; Bishop, J. T.; Nakagawa, S.; Gregorich, S. E.; Sit, A.; Vargas, J.; Caghey, A. B.; Sykes, S.; Pierce, L.; Norton, M. E. Effect of Enhanced Information, Values Clarification, and Removal of Financial Barriers on Use of Prenatal Genetic Testing. *Obstet. Gynecol. Surv.* **2015**, *70*, 7–9, doi:10.1097/OGX.0000000000000146.

37. Marcantonii, J.R.; Finney, K.; Lane, M.A. Using Health Literacy Guidelines to Improve Discharge Education and the Post-Hospital Transition. *Am. J. Med. Qual.* **2013**, *29*, 86–86, doi:10.1177/1062860613508905.

38. Miller, M. J.; Abrams, M. A.; Earles, B.; Phillips, K.; McCleary, E. M. Improving Patient-Provider Communication for Patients Having Surgery. *J. Patient Saf.* **2011**, *7*, 30–38, doi:10.1097/pts.0b013e31820c6d.

39. Mueller, S. K.; Giannelli, K.; Boxer, R.; Schnipper, J. L. Readability of patient discharge instructions with and without the use of electronically available disease-specific templates. *J. Am. Med. Inform. Assoc.* **2015**, *22*, 857–863, doi:10.1093/jamia/ocv005.

40. Murray, M. D.; Young, J.; Hoke, S.; Tu, W.; Weiner, M.; Morrow, D.; Stroupe, K. T. Wu, J. Clark, D. Smith, F. Gradus-Pizlo, I. Weinberger, M. Brater, D. C. Pharmacist Intervention to Improve Medication Adherence in Heart Failure. *Ann. Intern. Med.* **2007**, *146*, 714, doi:10.7326/0003-4819-146-10-200705150-00005.

41. Press, V. G.; Arora, V. M.; Shah, L. M.; Lewis, S. L.; Charbeneau, J.; Naureckas, E. T.; Krishnan, J. A.; Teaching the Use of Respiratory Inhalers to Hospitalized Patients with Asthma or COPD: A Randomized Trial. *J. Gen. Intern. Med.* **2012**, *27*, 1317–1325, doi:10.1007/s11606-012-2090-9.

42. Roberts, N.; Partridge, M. Evaluation of a paper and electronic pictorial COPD action plan. *Chronic Respir. Dis.* **2011**, *8*, 31–40, doi:10.1177/1479972310382245.

43. Sahm, L. J.; Wolf, M. S.; Curtis, L. M.; Behan, R.; Brennan, M.; Gallwey, H.; Mc Carthy, S. What’s in a label? An exploratory study of patient-centered drug instructions. *Eur. J. Clin. Pharmacol.* **2011**, *68*, 777–782, doi:10.1007/s00228-011-1169-2.

44. Send, A. F. J.; Schwab, M.; Gauss, A.; Rudofsky, G.; Haefeli, W. E.; Seidling, H. M. Pilot study to assess the influence of an enhanced medication plan on patient knowledge at hospital discharge. *Eur. J. Clin. Pharmacol.* **2014**, *70*, 1243–1250, doi:10.1007/s00228-014-1723-9.

45. Seth, N. A Health Literacy Strategy to Empower the Underserved Gynecological Surgery Patients to Reduce 7-Day Readmissions. ProQuest Dissertations Publishing: Wilmington University, New Castle, DE, USA, 2015.

46. Sox, C. M.; Gribbons, W. M.; Loring, B. A.; Mandl, K. D.; Batista, R.; Porter, S. C. Patient-Centered Design of an Information Management Module for a Personally Controlled Health Record. *J. Med. Internet Res.* **2010**, *12*, e26, doi:10.2196/jmir.1269.

47. Sudore, R. L.; Landefeld, C. S.; Barnes, D. E.; Lindquist, K.; Williams, B. A.; Brody, R.; Schilling, D. An advance directive redesigned to meet the literacy level of most adults: A randomized trial. *Patient Educ. Couns.* **2007**, *69*, 165–195, doi:10.1016/j.pec.2007.08.015.

48. Van der Vaart, R.; Drossaert, C. H.; Taai, E.; Drossaers-Bakker, K. W.; Vonkeman, H. E.; van de Laar, M. A. Impact of patient-accessible electronic medical records in rheumatology: Use, satisfaction and effects on empowerment among patients. *BMC Musculoskelet. Disord.* **2014**, *15*, doi:10.1186/1477-7837-15-102.

49. Williams, A.; Manias, E.; Liew, D.; Gock, H.; Gorelik, A. Working with CALD groups: Testing the feasibility of an intervention to improve medication self-management in people with kidney disease, diabetes, and cardiovascular disease. *Ren. Soc. Australas.* **2012**, *8*, 62–69.

50. Wolf, M. S.; Bailey, S. C.; Serper, M.; Smith, M.; Davis, T. C.; Russell, A. L.; Manzoor, B. S.; Lambert, B. Comparative Effectiveness of Patient-centered Strategies to Improve FDA Medication Guides. *Med. Care* **2014**, *52*, 781–789, doi:10.1016/j.mrl.2007.08.015.

51. Yin, H. S.; Dreyer, B. P.; Moreira, H. A.; van Schaick, L.; Rodriguez, L.; Boettger, S.; Mendelsohn, A. L. Liquid Medication Dosing Errors in Children: Role of Provider Counseling Strategies. *Acad. Pediatr.* **2014**, *14*, 262–270, doi:10.1016/j.acap.2014.01.003.

52. Yin, H. S.; Dreyer, B. P.; van Schaick, L.; Foltin, G. L.; Dinglas, C.; Mendelsohn, A. L. Randomized Controlled Trial of a Pictogram-Based Intervention to Reduce Liquid Medication Dosing Errors and Improve Adherence Among Caregivers of Young Children. *Arch. Pediatr. Adolesc. Med.* **2008**, *162*, 814, doi:10.1001/archpedi.162.9.814.
53. Zullig, L. L.; McCant, F.; Melnyk, S. D.; Danus, S.; Bosworth, H. B. A health literacy pilot intervention to improve medication adherence using Meducation® technology. Patient Educ. Couns. 2014, 95, 288–291, doi:10.1016/j.pec.2014.02.004.

54. Axelrod, D. A.; Kynard-Amerson, C. S.; Wojciechowski, D.; Jacobs, M.; Lentine, K. L.; Schnitzler, M.; Peipert, J. D.; Waterman, A. D. Cultural competency of a mobile, customized patient education tool for improving potential kidney transplant recipients’ knowledge and decision-making. Clin. Transplant. 2017, 31, e12944, doi:10.1111/ctr.12944.

55. Davis, T.; Hancock, J.; Morris, J.; Branim, P.; Seth, A.; Rademaker, A.; Arnold, C. Impact of Health Literacy-directed Colonoscopy Bowel Preparation Instruction Sheet. Am. J. Health Behav. 2017, 41, 301–308, doi:10.5993/ajhb.41.3.9.

56. Felicitas-Perkins, J. Q.; Palalay, M. P.; Cuaresma, C.; Ho, R. C.; Chen, M. S.; Jr, Dang, J.; Loui, W. S. A Pilot Study to Determine the Effect of an Educational DVD in Philippine Languages on Cancer Clinical Trial Participation among Filipinos in Hawai‘i. Hawaii J. Med. Public Health 2017, 76, 171–177.

57. Lindquist, L. A.; Ramirez-Zohof, V.; Sunkara, P. D.; Forcucci, C.; Campbell, D. S.; Mitzen, P.; Ciolino, J. D.; Kricke, G.; Seltzer, A.; Ramirez, A. V.; Cameron, K. A. Helping Seniors Plan for Posthospital Discharge Needs Before a Hospitalization Occurs: Results from the Randomized Control Trial of PlanYourLifespan.org. J. Hosp. Med. 2017, 12, 911–917, doi:10.12788/jhm.2798.

58. McWilliams, A.; Reeves, K.; Shade, L.; Burton, E.; Tapp, H.; Courtlandt, C.; Gunter, A.; Dulin, M. F. Patient and Family Engagement in the Design of a Mobile Health Solution for Pediatric Asthma: Development and Feasibility Study. JMIR mHealth uHealth 2018, 6, e68, doi:10.2196/preprints.8849.

59. Phillippi, J. C.; Doersam, J. K.; Neal, J. L.; Roumie, C. L. Electronic Informed Consent to Facilitate Recruitment of Pregnant Women into Research. J. Obstet. Gynecol. Neonatal Nurs. 2018, 47, 529–534, doi:10.1016/j.jogn.2018.04.134.

60. Press, V. G.; Kelly, C. A.; Kim, J. J.; White, S. R.; Meltzer, D. O.; Arora, V. M. Virtual Teach-To-Goal™ Adaptive Learning of Inhaler Technique for Inpatients with Asthma or COPD. J. Allergy Clin. Immunol. Pract. 2017, 5, 1032–1039, doi:10.1016/j.jaip.2016.11.018.

61. Priegue, M.; Almuedo, A.; Rodriguez, I.; Rovira, O.; Soler, N.; Pardo, C.; Pola, N.; Mas, P.; Modamio, P.; Marinó, E. L. Pharmacist intervention in patients receiving treatment for Chagas disease: An emerging challenge for non-endemic countries. Infect. Dis. Health 2017, 22, 219–226, doi:10.1016/j.idh.2017.07.004.

62. Spelley, R.; Tarima, S.; Denzen, E.; Moore, H.; Abhyankar, S.; Dawson, P.; Foley, A.; Gersten, I.; Horwitz, M.; Idessa, L.; Joffe, S.; Kamani, N.; King, R.; Lazaryan, A.; Morris, L.; Horowitz, M. M.; Majhail, N. S. Easy-to-Read Informed Consent Form for Hematopoietic Cell Transplantation Clinical Trials: Results from the Blood and Marrow Transplant Clinical Trials Network 1205 Study. Biol. Blood Marrow Transplant. 2018, 24, 2145–2151, doi:10.1016/j.bbmt.2018.04.014.

63. Srisuk, N.; Cameron, J.; Ski, C. F.; Thompson, D. R. Randomized controlled trial of family-based education for patients with heart failure and their carers. J. Adv. Nurs. 2016, 73, 857–870, doi:10.1111/jan.13192.

64. Unaka, N.; Statile, A.; Jerardi, K.; Dahale, D.; Morris, J.; Libero, B.; Jenkins, A.; Simpson, B.; Mullaney, R.; Kelley, J.; Durling, M.; Shafer, J.; Brady, P. Improving the readability of pediatric hospital medicine discharge instructions. J. Hosp. Med. 2017, 12, 551–557, doi:10.12788/jhm.2770.

65. Yin, H. S.; Gupta, R. S.; Mendelsohn, A. L.; Dreyer, B.; Schaick, L. V.; Brown, C. R.; Encalada, K.; Sanchez, D. C.; Warren, C. M.; Tomopoulos, S. Use of a low-literacy written action plan to improve parent understanding of pediatric asthma management: A randomized controlled study. J. Asthma 2017, 54, 919–929, doi:10.1080/02770933.2016.1277542.

66. Hicks, B. L.; Brittan, M. S.; Knapp-Clevenger, R. Group Style Central Venous Catheter Education Using the GLAD Model. J. Pediatr. Nurs. 2019, 45, 67–72, doi:10.1016/j.pedin.2018.09.006.

67. Khan, A.; Spector, N. D.; Baird, J. D.; Ashland, M.; Starmer, A. J.; Rosenbluth, G.; Garcia, B. M.; Litterer, K. P.; Rogers, J. E.; Dalal, A. K.; Lipsitz, S.; Yoon, C. S.; Zigmont, K. R.; Guiot, A.; O’Toole, J. K.; Patel, A.; Bismilla, Z.; Coffey, M.; Langrish, K.; Blankenburg, R. L.; Destino, L. A.; Everhart, J. L.; Good, B. P.; Kocolas, I.; Srivastava, R.; Calaman, S.; Cray, S.; Kuzma, N.; Lewis, K.; Thompson, E. D.; Hepps, J. H.; Lopreiato, J. O.; Yu, C. E.; Haskell, H.; Kruvdend, E.; Micalizzi, D. A.; Alvarado-Little, W.; Dreyer, B. P.; Yin, H. S.; Subramony, A.; Patel, S. J.; Sectish, T. C.; West, D. C.; Landrigan, C. P. Patient safety after implementation of a coproduced family centered communication programme: Multicenter before and after intervention study. BMJ 2018, doi:10.1136/bmj.k4764.
68. Lee, J. S.; Nápoles, A.; Mutha, S.; Pérez-Stable, E. J.; Gregorich, S. E.; Livaudais-Toman, J.; Karliner, L. S. Hospital discharge preparedness for patients with limited English proficiency: A mixed methods study of bedside interpreter-phones. Patient Educ. Couns. 2018, 101, 25–32, doi:10.1016/j.pec.2017.07.026.

69. Mcevoy, A.; Sauder, M. B.; Mcdonald, K.; Suter, P.; Pouliot, A.; Zemek, R.; Kanigsberg, N.; Vaillancourt, R.; Ramien, M. L.Derivation, Evaluation, and Validation of Illustrations of Key Counselling Points for a Pediatric Eczema Action Plan. J. Cutan. Med. Surg. 2017, 22, 147–153, doi:10.1177/1203475417741260.

70. Merchant, R. C.; Liu, T.; Clark, M. A.; Carey, M. P.Facilitating HIV/AIDS and HIV testing literacy for emergency department patients: A randomized, controlled, trial. BMC Emerg. Med. 2018, 18, doi:10.1186/s12873-018-0172-7.

71. Plate, J. F.; Ryan, S. P.; Bergen, M. A.; Hong, C. S.; Attarian, D. E.; Seyler, T. M. Utilization of an Electronic Patient Portal Following Total Joint Arthroplasty Does Not Decrease Readmissions. J. Arthroplast. 2019, 34, 211–214, doi:10.1016/j.arth.2018.11.002.

72. Scalia, P.; Durand, M.-A.; Faber, M.; Kremer, J. A.; Song, J.; Elwyn, G. User-testing an interactive option grid decision aid for prostate cancer screening: Lessons to improve usability. BMJ Open 2019, 9, e026748, doi:10.1136/bmjopen-2018-026748.

73. Staynova, R. A.; Gueorguiev, S. R.; Petkova-Gueorguieva, E. S.; Vasilieva, E. V.; Stoimenova, A. H.; Yanatchkova, V. E.; Madzharov, V. G.Written Health Education Materials for Women with Gestational Diabetes Mellitus – Evaluation of Usefulness and Patients’ Satisfaction. Folia Med. 2019, 61, 127–133, doi:10.2478/folmed-2018-0041.

74. Wallace, A. S.; Pierce, N. L.; Davisson, E.; Manges, K.; Tripp-Reimer, T. Social resource assessment: Application of a novel communication tool during hospital discharge. Patient Educ. Couns. 2019, 102, 542–549, doi:10.1016/j.pec.2018.09.022.

75. Alberti, T.L.; Nannini, A. Patient comprehension of discharge instructions from the emergency department: A literature review. J. Am. Acad. Nurse Pract. 2012, 25, 186–194, doi:10.1111/j.1745-7599.2012.00767.x.

76. Berkman, N. D.; Sheridan, S. L.; Donahue, K. E.; Halpern, D. J.; Crotty, K.Low Health Literacy and Health Outcomes: An Updated Systematic Review. Ann. Intern. Med. 2011, 155, 97, doi:10.7326/0003-4819-155-2-201107190-00005.

77. Chan, H. K.; Hassali, M. A.; Lim, C. J.; Saleem, F.; Tan, W. L. Using pictograms to assist caregivers in liquid medication administration: A systematic review. J. Clin. Pharm. Ther. 2015, 40, 266–272, doi:10.1111/jcpt.12272.

78. Jacobs, R. J.; Lou, J. Q.; Ownby, R. L.; Caballero, J. A systematic review of eHealth interventions to improve health literacy. Health Inform. J. 2014, 22, 81–98, doi:10.1177/1460458214534092.

79. Santo, A.; Laizner, A.M.; Shohet, L. Exploring the value of audiotapes for health literacy: A systematic review. Patient Educ. Couns. 2005, 58, 235–243, doi:10.1016/j.pec.2004.07.001.

80. Sheridan, S. L.; Halpern, D. J.; Viera, A. J.; Berkman, N. D.; Donahue, K. E.; Crotty, K. Interventions for Individuals with Low Health Literacy: A Systematic Review. J. Health Commun. 2011, 16(Suppl. S3), 30–54, doi:10.1080/10810730.2011.604391.

81. Wilson, E. A.; Makoul, G.; Bojarski, E. A.; Bailey, S. C.; Waite, K. R.; Rapp, D. N.; Baker, D. W.; Wolf, M. S. Comparative analysis of print and multimedia health materials: A review of the literature. Patient Educ. Couns. 2012, 89, 7–14, doi:10.1016/j.pec.2012.06.007.

82. Curran, J. A.; Gallant, A. J.; Zemek, R.; Newton, A. S.; Jabbour, M.; Chorney, J.; Murphy, A.; Hartling, L.; Macwilliams, K.; Plint, A.; Macphee, S.; Bishop, A.; Campbell, S. G.Discharge communication practices in pediatric emergency care: A systematic review and narrative synthesis. Syst. Rev. 2019, 8, doi:10.1186/s13643-019-0995-7.

83. Tan, J.P.; Cheng, K.K.F.; Siah, R.C. A systematic review and meta-analysis on the effectiveness of education on medication adherence for patients with hypertension, hyperlipidaemia and diabetes. J. Adv. Nurs. 2019, doi:10.1111/jan.14025.

84. Chan, B.; Goldman, L. E.; Sarkar, U.; Schneidermann, M.; Kessell, E.; Guzman, D.; Crichtfield, J.; Kushel, M. The Effect of a Care Transition Intervention on the Patient Experience of Older Multi-Lingual Adults in the Safety Net: Results of a Randomized Controlled Trial. J. Gen. Intern. Med. 2015, 30, 1788–1794, doi:10.1007/s11606-015-3362-y.

85. Cochrane, B.; Foster, J.; Boyd, R.; Atlantis, E. Implementation challenges in delivering team-based care (“TEAMcare”) for patients with chronic obstructive pulmonary disease in a public hospital setting: A mixed methods approach. BMC Health Serv. Res. 2016, 16, doi:10.1186/s12913-016-1592-2.
86. Daley, C.M. A Hybrid Transitional Care Program. *Crit. Pathw. Cardiol.* 2010, 9, 231–234, doi:10.1097/HPC.0b013e318208838.

87. Jack, B.W. A Reengineered Hospital Discharge Program to Decrease Rehospitalization. *Ann. Intern. Med.* 2009, 150, 178, doi:10.7326/0003-4819-150-3-200902030-00007.

88. Johnson, R. W.; Zhao, Y.; Newby, L. K.; Granger, C. B.; Granger, B. B. Reasons for Noncompletion of Advance Directives in a Cardiac Intensive Care Unit. *Am. J. Crit. Care* 2012, 21, 311–320, doi:10.4037/ajcc2012394.

89. Masterson Creber, R. M.; Patey, M.; Lee, C. S.; Riegel, B. Motivational Interviewing to Improve Self-care for Patients with Chronic Heart Failure: MITI-HF Randomized Controlled Trial. *J. Card Fail.* 2015, 21, S78, doi:10.1016/j.cardfail.2015.06.244.

90. Micklethwaite, A.; Brownson, C. A.; O’Toole, M. L.; Kilpatrick, K. E. The Business Case for a Diabetes Self-Management Intervention in a Community General Hospital. *Popul. Health Manag.* 2012, 15, 230–235, doi:10.1089/pop.2011.0051.

91. Oancea, C.; Fira-Mladinescu, O.; Timar, B.; Tudorache, V. Impact of medical education program on COPD patients: A cohort prospective study. *Wien. klin Wochenschr.* 2015, 127, 388–393, doi:10.1007/s00508-015-0712-2.

92. Stockwell, M. S.; Catallozzi, M.; Larson, E.; Rodriguez, C.; Subramony, A.; Martinez, R. A.; Martinez, E.; Barrett, A.; Effect of a URI-related educational intervention in early head start on ED visits. *Pediatrics* 2014, 133, e1223–e1240, doi:10.1542/peds.2013-2350.

93. Wolf, M. S.; Seligman, H.; Davis, T. C.; Fleming, D. A.; Curtis, L. M.; Pandit, A. U.; Parker, R. M.; Schillinger, D.; Dewalt, D. A. Clinic-Based Versus Outsourced Implementation of a Diabetes Health Literacy Intervention. *J. Gen. Intern. Med.* 2013, 29, 59–67, doi:10.1007/s11606-013-2582-2.

94. Davis, J. Engage2: Implementing a Health Literacy Protocol for Patient Assessment and Engagement. *J. Consum. Health Internet* 2017, 21, 338–349, doi:10.1891/15398285.2017.1361278.

95. Dingemans, A. J.; Reck, C. A.; Vilanova-Sanchez, A.; Gonzalez, D. O.; Gasior, A. C.; Weaver, L. J.; Gagnon, R.; Hoover, E.; Sraha, G.; Levitt, M. A.; Wood, R. J. Does clinic visit education within a multidisciplinary center improve health literacy scores in caregivers of children with complex colorectal conditions? *J. Pediatr. Surg.* 2017, 52, 1997–2000, doi:10.1016/j.jpedsurg.2017.08.044.

96. Lee, J. S.; Pérez-Stable, E. J.; Gregorich, S. E.; Crawford, M. H.; Green, A.; Livaudais-Toman, J.; Karliner, L. S. Increased Access to Professional Interpreters in the Hospital Improves Informed Consent for Patients with Limited English Proficiency. *J Gen Intern Med.* 2017, 32(8):863-870. doi: 10.1007/s11606-017-3983-4.

97. Navaneethan, S. D.; Jolly, S. E.; Schold, J. D.; Arrigain, S.; Nakhoul, G.; Konig, V.; Hyland, J.; Burrucker, Y. K.; Dann, P. D.; Tucky, B. H.; Sharp, J.; Nally, J. V. Pragmatic Randomized, Controlled Trial of Patient Navigators and Enhanced Personal Health Records in CKD. *Clin. J. Am. Soc. Nephrol.* 2017, 12, 1418–1427, doi:10.2215/cjn.02100217.

98. Kripalani, S.; Chen, G.; Ciampa, P.; Theobald, C.; Cao, A.; Mcbride, M.; Dittus, R. S.; Speroff, T. A transition care coordinator model reduces hospital readmissions and costs. *Contemp. Clin. Trials* 2019, 81, 55–61, doi:10.1016/j.cct.2019.04.014.

99. Rayan-Gharrar, N.; Balicer, R. D.; Tadmor, B.; Shadmi, E. Association between cultural factors and readmissions: The mediating effect of hospital discharge practices and care-transition preparedness. *BMJ Qual. Saf.* 2019, doi:10.1136/bmjqs-2019-009317.

100. Grice, G. R.; Tiemeier, A.; Hurd, P.; Berry, T. M.; Voorhees, M.; Prosser, T. R.; Sailors, J.; Gatts, N. M.; Duncan, W. Student Use of Health Literacy Tools to Improve Patient Understanding and Medication Adherence. *Consiliat Health Pharm.* 2014, 29, 240–253, doi:10.4140/tcpn.2014.240.

101. Kornberger, C.; Gibson, C.; Sadowski, S.; Maletta, K.; Klingbeil, C. Using “Teach-Back” to Promote a Safe Transition From Hospital to Home: An Evidence-Based Approach to Improving the Discharge Process. *J. Pediatr. Nurs.* 2013, 28, 282–291, doi:10.1016/j.pedin.2012.10.007.

102. Krajic, K.; Strašmayr, C.; Trummer, U.; Novak-Zezula, S.; Pelikan, J. Improving ethnocultural competence of hospital staff by training: Experiences from the European 'Migrant-friendly Hospitals' project. *Div. Health Soc. Care* 2005, 2, 279–290.

103. Kripalani, S.; Jacobson, K. L.; Brown, S.; Manning, K.; Rask, K. J.; Jacobson, T. A. Development and Implementation of a Health Literacy Training Program for Medical Residents. *Med. Educ. Online* 2006, 11, 4612, doi:10.3402/meo.v11i.4612.
104. Lori, J.R.; Munro, M.L.; Chuey, M.R. Use of a facilitated discussion model for antenatal care to improve communication. *Int. J. Nurs. Stud.* 2016, 54, 84–94, doi:10.1016/j.ijnurstu.2015.03.018.

105. Shipman, J.P.; Kurtz-Rossi, S.; Funk, C.J. The health information literacy research project. *J. Med. Libr. Assoc.* 2009, 97, 293–301. doi:10.3163/1536-5050.97.4.014.

106. Stikes, R.; Arterberry, K.; Logsdon, M.C. A Nurse Leadership Project to Improve Health Literacy on a Maternal-Infant Unit. *J. Obstet. Gynecol. Neonatal Nurs.* 2015, 44, 665–676, doi:10.1111/jogn.12742.

107. Trummer, U. F.; Mueller, U. O.; Nowak, P.; Stidl, T.; Pelikan, J. M. Does physician–patient communication that aims at empowering patients improve clinical outcome? *Patient Educ. Couns.* 2006, 61, 299–306, doi:10.1016/j.pec.2005.04.009.

108. Grabee, K.L.; Beeler, C.J. Taking the Pulse of the University of Tennessee Medical Center’s Health Literacy Knowledge. *Med. Ref. Serv. Q.* 2018, 37, 89–96, doi:10.1080/02763869.2017.1404399.

109. Kingbeil, C.; Gibson, C. The Teach Back Project: A System-wide Evidence Based Practice Implementation. *J. Pediatr. Nurs.* 2018, 42, 81–85, doi:10.1016/j.pedn.2018.06.002.

110. Roberts, N. J.; Evans, G.; Blenkhor, P.; Partridge, M. R. Development of an electronic pictorial asthma action plan and its use in primary care. *Patient Educ. Couns.* 2010, 80, 141–146, doi:10.1016/j.pec.2009.09.040.

111. Beauchamp, A.; Batterham, R. W.; Dodson, S.; Astbury, B.; Elsworth, G. R.; Mcphee, C.; Jacobson, J.; Buchbinder, R.; Osborne, R. H. Systematic development and implementation of interventions to OPtimise Health Literacy and Access (OpHelia). *BMC Public Health* 2017, 17, doi:10.1186/s12889-017-4147-5.

112. Gazmararian, J. A.; Beditz, K.; Pisano, S.; Carreón, R. The Development of a Health Literacy Assessment Tool for Health Plans. *J. Health Commun.* 2010, 15(Suppl. S2), 93–101, doi:10.1080/10810730.2010.499986.

113. Innis, J.; Barnsley, J.; Berta, W.; Daniel, I. Measuring health literate discharge practices. *Int. J. Health Care Qual. Assur.* 2017, 30, 67–78, doi:10.1108/ijhcqa-06-2016-0080.

114. Weidmer, B. A.; Brach, C.; Slaughter, M. E.; Hays, R. D. Development of Items to Assess Patients' Health Literacy Experiences at Hospitals for the Consumer Assessment of Healthcare Providers and Systems (CAHPS) Hospital Survey. *Med. Care* 2012, 50, S12–S21, doi:10.1097/mlr.0b013e31826524a0.

115. Oelschlegel, S.; Grabee, K. L.; Tester, E.; Heidel, R. E.; Russomanno, J. Librarians Promoting Changes in the Health Care Delivery System through Systematic Assessment. *Med. Ref. Serv. Q.* 2018, 37, 142–152, doi:10.1080/02763869.2018.1439216.

116. Palumbo, R.; Annarumma, C.; Musella, M. Exploring the meaningfulness of healthcare organizations: A multiple case study. *Int. J. Public Sect. Manag.* 2017, 30, 503–518, doi:10.1108/ijpsm-10-2016-0174.

117. Hayran, O.; Özer, O. Organizational health literacy as a determinant of patient satisfaction. *Public Health* 2018, 163, 20–26, doi:10.1016/j.puhe.2018.06.011.

118. Jessup, R. L.; Osborne, R. H.; Buchbinder, R.; Beauchamp, A. Using co-design to develop interventions to address health literacy needs in a hospitalised population. *BMC Health Serv. Res.* 2018, 18, doi:10.1186/s12913-018-3801-7.

119. Innis, J.; Barnsley, J.; Berta, W.; Daniel, I. Development of Indicators to Measure Health Literate Discharge Practices. *J. Nurs. Care Qual.* 2017, 32, 157–163, doi:10.1177/0882223017695060.

120. Seligman, H. K.; Wallace, A. S.; Dewalt, D. A.; Schillinger, D.; Arnold, C. L.; Shilliday, B. B.; Delgadillo, A.; Bengal, N.; Davis, T. C. Facilitating Behavior Change with Low-literacy Patient Education Materials. *Am. J. Health Behav.* 2007, 31, 69–78, doi:10.5993/ajhb.31.s1.9.

121. Chiu, J.; Moeller, D. D.; Johnson, J.; Duwe, E. A. G.; Graumlich, J. F.; Murray, M. D.; Morrow, D. G. A Multi-faceted Approach to Promote Comprehension of Online Health Information among Older Adults. *Gerontologist* 2017, 58, 686–695, doi:10.1093/geront/gnw254.

122. Naccarella, L.; Biuso, C.; Jennings, A.; Patsamanis, H. Improving access to important recovery information for heart patients with low health literacy: Reflections on practice-based initiatives. *Aust. Health Rev.* 2019, 43, 323, doi:10.1071/ah17270.

123. Thomacos, N.; Zazzryn, T. *Enliven Organisational Health Literacy Self-Assessment Audit Resource*; Enliven & School of Primary Health Care, Monash University: Melbourne, Australia, 2013.

124. Pelikan, J.; Dietscher, C. [Why should and how can hospitals improve their organizational health literacy?] Warum Sollten Und Wie Konn Krankenhauser Ihre Organ Gesundheitskompetenz Verbessern? *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz* 2015, 58, 989–995.

125. Rudd, R. Navigating hospitals: Literacy barriers. *Lit. Harvest* 2004 Fall, 19–24.

126. Howard, D.H.; Gazmararian, J.; Parker, R.M. The impact of low health literacy on the medical costs of Medicare managed care enrollees. *Am. J. Med.* 2005, 118, 371–377, doi:10.1016/j.amjmed.2005.01.010.
127. Haun, J.N.; Patel, N.R.; French, D.D.; Campbell, R.R.; Bradham, D.D.; Lapcevic, W.A. Association between health literacy and medical care costs in an integrated healthcare system: A regional population based study. *BMC Health Serv. Res.* **2015**, *15*, 249.

128. Adsul, P.; Wray, R.; Gautam, K.; Jupka, K.; Weaver, N.; Wilson, K. Becoming a health literate organization: Formative research results from healthcare organizations providing care for undeserved communities. *Health Serv. Manag. Res.* **2017**, *30*, 188–196, doi:10.1177/0951484817727130.

129. Brach, C. The Journey to Become a Health Literate Organization: A Snapshot of Health System Improvement. *Stud. Health Technol. Inform.* **2017**, *240*, 203–237.

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