Measuring Attitudes: Current Practices in Health Professional Education

Ted Brown, Stephen Isbel, Mong-Lin Yu, and Thomas Bevitt

Contents

Abstract

Attitudes are an enduring set of beliefs, perceptions, and ideas. Students enrolled in health professional courses may have strong beliefs and opinions on certain topics related to professional education and their clinical practice. These attitudes may become more apparent while health professional students are completing

T. Brown (✉) · M.-L. Yu
Department of Occupational Therapy, School of Primary and Allied Health Care, Faculty of Medicine, Nursing and Health Sciences, Monash University – Peninsula Campus, Frankston, VIC, Australia
e-mail: ted.brown@monash.edu; mong-lin.yu@monash.edu

S. Isbel · T. Bevitt
Faculty of Health, The University of Canberra Hospital, Bruce, ACT, Australia
e-mail: Stephen.Isbel@canberra.edu.au; Thomas.Bevitt@canberra.edu.au

D. Nestel et al. (eds.), *Clinical Education for the Health Professions*,
https://doi.org/10.1007/978-981-13-6106-7_76-1

clinical placements. This chapter provides an overview of definitions of what attitudes are; why attitudes are important; how attitudes develop, change, and evolve; approaches to the measurement of and gathering attitude-related data; types of quantitative attitude scales; qualitative approaches to gathering attitude data; the steps involved in constructing an attitude measurement scale; and the relevance of attitudes to health professional clinical education. Academic and clinical educators need to be conversant on the topic of students' attitudes and its relationship to clinical education.

Keywords

Attitudes · Beliefs · Measurement · Students · Health professional · Clinical education · Fieldwork · Internships

Introduction

Attitudes are part of us as human beings and an intrinsic aspect of health professional students' inner selves when completing clinical education placements, internships, or clerkships. Attitudes are an internal component of our psyche, are enduring, and influence our values, beliefs, and internal dialogue. As such, it is important for academic and clinical educators to be mindful of health professional students' attitudes. This is particularly relevant for the health care disciplines when providing care and services involves interacting with patients, families, and other health care team members. No doubt health professional students' attitudes towards certain cultural groups, social issues, diagnostic groups, and clinical decision making will be challenged when completing practicums, internships, and placements. Part of the role of academic and clinical educators is to respond to these 'attitude-challenge' or 'attitude-confrontation' incidences and provide 'just-right' learning experiences and feedback that will promote students' critical reflection, attitude refinement, and professional growth. This chapter will cover the topic of attitudes and their measurement. A definition of what attitudes are, how attitudes develop and evolve, why attitudes are important (including in relation to clinical education), approaches and techniques to gathering and measuring attitude data, and examples of attitude research applied to health professional students will be discussed.

What Are Attitudes?

Attitudes are numerous and varied, reflected in the range of definitions of what constitutes an attitude. Allport (1935, p. 810) defined an attitude as "a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related." An object, event, location, or individual (including oneself) that is the focus of specific attitudes is referred to as an *attitude object* (Solomon 2017).

Attitudes that people possess can be permanent or transitory, basic or fleeting, complex or simple, and/or permanent or transient (Guyer and Fabrigar 2015). Anastasi (1988, p. 584) described an attitude as "a tendency to react favorably or unfavorably toward a designated class of stimuli, such as a national or ethnic group, a custom or an institution." Attitudes are learned, include features of personality (such as interests, values, motivations, views, and social beliefs), can fall anywhere along a continuum from acceptable/favorable to completely unacceptable/unfavorable, and can assume a number of aspects (including intensity, course, generality, and/or specificity) (Crano and Gardikiotis 2015). All people develop, hold, and express attitudes regardless of their gender, ethnicity, level of educational attainment, socioeconomic status, age, status, or intelligence (Reid 2006).

By and large, people from a country or political region hold similar attitudes on a range of issues. For example, values that Australian citizens espouse include freedom and dignity of the individual, freedom of religious beliefs, equality of men and women, a sense of egalitarianism, fair play, and tolerance, and care for those in need. Codes of conduct and ethical behavior for specific health care disciplines require health professionals to demonstrate specific types of attitudes. Examples of these attitudinal behaviors include altruism, respect, dignity, compassion, empathy, openness, cultural awareness, equality, accountability, honesty, autonomy, motivation, and social justice awareness. Conversely, attitudes considered undesirable in health professionals include being judgmental, dishonest, negative, intimidating, and self-centered. Therefore, health professional students completing practice education placements need to have appropriate attitudes modelled to them, and also be given constructive feedback on unacceptable attitudes they may express or behavior(s) they may demonstrate.

Rosenberg and Havland (1960, p. 3) described attitudes as "predispositions to respond in a particular way towards a specific class of objects." Since attitudes are predispositions, they are not measurable or visible, but in its place are delineated from the way individuals respond to specific stimuli. Attitudes can be implicit or explicit. Implicit attitudes operate at the conscious level with individuals being aware of them, whereas explicit attitudes impact behavior unconsciously with no recognition of them (Hahn et al. 2013). For this reason, even when attitudes are characterized, they cannot be clearly observed, but instead must be implied from observable verbal and nonverbal behavior(s). Students completing clinical placements may demonstrate implicit attitudes towards certain clients or approaches to professional practice, and it is the role of the fieldwork educator to provide feedback to the student if these attitudes are deemed to be inappropriate or unprofessional in nature.

There are different conceptualizations of attitudes. There is the 'single component model of attitudes' where attitudes represent a person's feelings, subjective reactions, and sentiments towards an attitude object. In sum, it is a unidimensional view of an attitude as the emotions and affect linked to the attitude object. On the other hand, the 'three components of attitudes' view takes a multidimensional perspective (Eagly and Chaiken 1993). The three components connected to the tripartite model are *affective* responses (such as moods, feelings, and emotions); *behavioral*

responses (explicit actions that individuals demonstrate to the attitude object); and *cognitive* responses (such as thoughts, ideas, or beliefs based on information). In relation to the attitude object, the three responses are all observable, but the attitude is inferred from the overt reaction of the individual. This framework has also been referred to as the ABC model of attitudes since it "emphasizes the interrelationships among knowing, feeling, and doing" (Solomon 2017, p. 286).

Why Are Attitudes Important?

Attitudes are significant for a number of reasons, including the fact they are predictive of behavior towards attitude objects, they are prevalent, are a discriminating influence on perceptions and memories, and underpin several mental functions. Attitudes are accurate behavioral barometers if the attitudes themselves are consistent, strong, based on familiarity and experience, and connected to the actions being predicted. Katz (1960) proposed a functionalist theory of attitudes whereby attitudes are governed by the functions they provide. He identified four types of psychological functions that attitudes serve: (i) *adaptive-adjustment/utilitarian function* (e.g., when a person expresses socially acceptable attitudes and is then rewarded by others with approval and social acceptance; this relates to the principles of reward and punishment); (ii) *ego-defensive function* (e.g., attitudes that guard one's self-esteem from internal feelings and external threats or that rationalize actions that make one experience guilt); (iii) *value-expressive function* (e.g., attitudes a person articulates that are indicative of, or central to, who he/she is; and (iv) *knowledge function* (e.g., attitudes provide meaning, worth, order, structure, and knowledge for one's life).

Overall, knowing peoples' attitudes helps others in predicting their behavioral responses. For example, a person may like people who are quiet, engaging, sensitive, and gentle and be put off by individuals who are loud, boisterous, opinionated, and discourteous. It is likely the impact of a person's social-personal attitude in this instance is to stay away from people who are outspoken and sure of themselves and gravitate towards individuals who are a better social fit for them. It is interesting to note that some researchers now believe that there is little to no association between verbal assessments of attitude and explicit behaviors of individuals (Guyer and Fabrigar 2015).

How Do Attitudes Develop?

A number of factors have been found to impact how and why attitudes form in human beings. These can include the social environment, cultural context, religious beliefs, family and home environment, maturity level, educational attainment, socio-economic status, existing prejudices, political environment, and personal life experiences in general. Attitudes can form directly as a consequence of direct personal experience or observation (Fabrigar et al. 2005).

Social norms and roles can have a powerful impact on a person's attitudes. *Social norms* comprise society's guidelines for what activities are viewed as appropriate, whereas *social roles* relate to how people are supposed to act in a specific environment or life role (Mackie et al. 2015). For example, international students from Asia-Pacific countries often see their placement supervisors as 'authority figures' and as 'superior' in social and workplace contexts and tend to 'listen' to their supervisors as opposed to being actively involved in discussions or asking questions. An additional attitudinal concept is *subjective norms* which refers to the influence of what a person believes others think or perceive what he/she should do. Subjective norms are composed of two factors: (i) the *intensity* of a normative belief and (ii) the *motivation* to comply with that belief (Solomon 2017).

According to the *Learning Theory of Attitude Change*, classical conditioning, operant conditioning, and observational learning can be applied to alter people's attitudes. Learning in the form of *classical conditioning* can be used to modify attitudes. People develop a favorable association with specific events, items, or individuals (e.g., association of stimuli and responses) and henceforward will have a positive attitude towards attitude objects. *Operant conditioning* can also be utilized to change people's behavior. For example, if a smoker receives enough negative feedback (in the form of negative reinforcement) about their habit, they might consider stopping smoking (Solomon 2017). Referred to as *observational learning*, individuals also learn attitudes by observing the people in their immediate environment (Fabrigar et al. 2005). For example, people may spend time watching their favorite news program, and this will influence their attitudes on specific news topics presented. Friends, peers, significant others, and family members may influence a person's attitudes through observational learning.

Another type of attitude model is the *Fishbein Expectation-Value Model* (Fishbein 1963), which is composed of three elements: (i) *salient beliefs* that people have about an attitude object; (ii) *objective-attribute linkages* which is the probability that a specific object has a significant trait or feature; and (iii) *evaluation* of each of the significant features.

Attitudes are typically integrated into a *cognitive structure* that is interconnected (Schwarz 2015). Altering one attitude will necessitate a change in other attitudes. Attitudes are linked horizontally and vertically. *Vertical attitude structure* refers to connections between fundamental core beliefs, whereas a *horizontal attitude configuration* occurs when two or more underlying beliefs are linked. Horizontally structured attitudes are much more enduring and difficult to modify (Crano and Gardikiotis 2015).

How Do Attitudes Change and Evolve?

Attitudes change and evolve over a person's life span. Some types of attitudes are deeply entrenched and are not readily open to influence or modification (Reid 2006). This could be referred to as 'attitude rigidity.' Other types of attitudes fluctuate or develop in response to a specific situation. Exhibiting 'attitude flexibility' implies

that a person's attitude is adaptable and able to shift or evolve based on the environmental demands placed on it. There are several potential hurdles to attitude change including a desire for consistency with what is familiar and comfortable, not enough information, lack of an incentive to change, insufficient motivation, or lack of adequate resources needed to make a substantial change.

There are several ways that attitudes can be changed or modified even though they may be deeply entrenched. Attitudes will often change via direct experience in life situations. Since harmful attitudes may result due to insufficient information, the provision of new evidence will assist to change attitudes. Another useful means to change attitudes is to settle differences between attitudes and behaviors. Finally, a person's attitudes may change to better match his/her behavior. This occurs due to a person experiencing a state of *cognitive dissonance,* a behavioral concept connected to *Dissonance Theory of Attitude Change* (Reid 2006). It happens when a person experiences psychological distress due to incompatible thoughts or beliefs. To decrease this sense of stress, a person may modify his/her attitudes so that they are in better alignment with their other beliefs or actual behaviors. Individuals try to reduce dissonance by eliminating, adding, or changing components of their attitudes (Solomon 2017).

Students completing clinical education placements may experience episodes of cognitive dissonance related to their learning, experience, and constructive feedback they receive. For example, final year students completing their final placement may be expected to independently manage their own caseload to meet the specified learning goals to pass the placement, and they may feel distressed if they are not given 'enough' cases to be responsible for. Hence, it is important that clear expectations are negotiated and communicated between the supervisor and student so that the fieldwork educators set clear expectations at the start of the placement to reduce dissonance experienced by the student.

Approaches and Techniques to Gathering and Measuring Attitude Data

Typically, there are four primary approaches towards gathering and measuring attitude data: self-reports, reports of others, sociometrics, and records (Zikmund et al. 2013). *Self-reports* involve individuals reporting directly about their own attitudes, beliefs, feelings, and ideas about a specific topic. This type of self-report attitude information is generated in one of two formats, written or oral. Written attitude self-reports can take the form of questionnaires, quantitative rating scales, logs, blogs, reflective journals, online surveys, or diaries. Oral self-report of attitudes can take the form of focus groups, key informant interviews, surveys, or polls. *Reports of others* occur where a third person reports about the attitudes of a person, group, or organization. Often parents/caregivers are asked to report on behalf of their children by health care professionals. Structured interviews, standardized questionnaires, journals, reports, or direct observation techniques can be used to generate this type of attitude data.

Sociometric techniques are employed when members of a group, team, department, or organization describe their attitudes and beliefs about one another. This can supply an overview of the attitude patterns within a group, for example, a multidisciplinary treatment team on a rehabilitation unit or members of a nongovernmental organization. Finally, another approach to attitude measurement is through the use of *records*. Records are the systematic documentation of regular events. Records can take the format of inventories, class attendance reports, medical reports, written or audio recordings of minutes of meetings that take place, spread sheets with academic grades, or the ratings of students' fieldwork performance using a standardized tool (Desselle 2005).

Within the use of self-reports, reports of others, sociometrics, and records, attitude measurement is achieved via one of the following techniques: questionnaires, interviews, written accounts, and observational ratings (Boateng et al. 2018). *Questionnaires* present the respondent with a range of items that they are asked to answer. Questionnaires can be presented in hard-copy written format or as an online survey. One type of item often included as part of a questionnaire is a rating scale where respondents are asked to rate individual items. *Interviews* occur via person-to-person interactions, on the telephone, or via online videoconferences. Interviews are face-to-face meetings between two or more people in which the respondent answers questions and they often take the format of a highly structured interview.

Written accounts can take several different forms including journals, logs, blogs, online posts, and diaries. Written accounts can be formal or informal. *Observations* are usually based on formal observations of an individual or groups of participants and bring to the fore actions and attitudes that otherwise may be unnoticed (Fabrigar et al. 2005). Questionnaires, interviews, written accounts, and observational ratings are all types of attitudinal measurement approaches that could be used with students completing clinical education placements.

Although the emotional and belief constituents of an attitude are internal to a person, his/her attitudes can be viewed based on his or her resulting behavior. Since attitudes are not always overt, they are measured via inferences and observations. Currently, several indirect approaches are used to measure attitudes including *physiological* tests (such as blood pressure, facial electromyography, pupillary reflex, dilation or response measures, or galvanic skin responses [GSR]), *projective* or *implicit* assessments (such as the Implicit Association Test, House-Tree-Person drawing, Draw a Person Task, Thematic Apperception Test, Rotter Incomplete Sentence Blank, Implicit PsyCap Questionnaire, or Rorschach Inkblot Test), *behavioral* measures (where behavior is utilized as an index that represents a given attitude towards the target object) (see Fig. 1) and written or verbal *self-report questionnaires* (Schwarz 2015; Maitland 2011). The primary weakness of all indirect attitude measurement approaches is their lack of sensitivity and objectivity to different levels or gradations of an attitude; however, the one advantage is that they are less likely to generate socially desirable responses.

Written and verbal self-report attitude questionnaires require respondents to carry out one of four activities: rating, ranking, sorting, or making a choice (Zikmund et al. 2013). A *rating* task requires a respondent to appraise the size of some trait or factor.

Ranking involves a respondent being asked to grade or rank order a number of attitude statements, feelings, or other traits of an attitude object. *Sorting* involves a respondent being given a number of response option cards, objects, pictures, or other relevant materials and then being asked to sort them into different piles or to categorize them. Respondents are then asked to verbally identify the piles or categories of the attitude objects. Finally, *making a choice* is a "measurement task that identifies preferences by requiring respondents to choose between two or more alternatives" (Zikmund et al. 2013, p. 313).

Types of Attitude Measurement Scales

Items on attitude questionnaires can take a variety of formats including *Thurstone scales, Likert scales,* s*emantic-differential scales, numerical rating scales, single-item direct measures, constant-sum scale, graphic rating scales,* and *Stapel scale* (DeCastellarnau 2017; Lovelace and Brickman 2013; Russell 2011). Thurstone scales include an assortment of statement items, and the respondent selects those he/she agrees with (Solomon 2017). The strengths of Thurstone scales are that the items express the direction and intensity of the attitude it is measuring, and there is an assumption of equal intervals between each rating point. These types of scales are time-consuming and expensive to construct, are less precise than Likert scales, and can possess value-laden biases (Maitland 2011).

Another common format for questionnaire items is the use of *Likert scales*. Likert scales need to have a minimum of three response options of either increasing or decreasing value and provide a method for summated ratings (see Fig. 2). The number of response options can be even or odd in number, but the most common

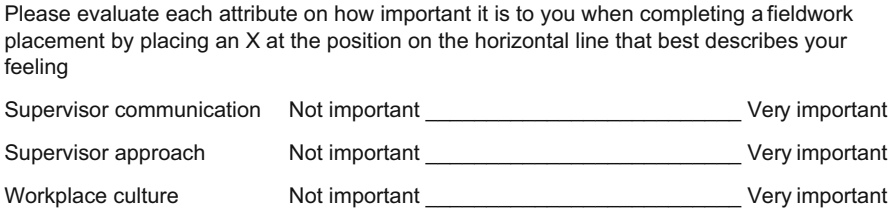

Fig. 1 Example of a rating scale

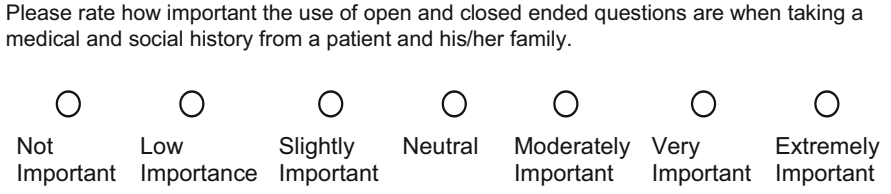

Fig. 2 Example of a seven-point Likert scale

number used is 5 (e.g., strongly disagree, disagree, no opinion, agree, strongly agree) or 7 (e.g., very unsatisfied, somewhat unsatisfied, unsatisfied, neither unsatisfied or unsatisfied, satisfied, somewhat satisfied, very satisfied). By their nature, Likert scales are relatively easy to design, inexpensive, and sensitive.

The responses to a number of Likert scale items may be added or averaged together to generate one or more composite scales. Each individual item is meant to represent a part or facet of the latent attitudinal construct that is being measured. The composite scales are intended to be a quantitative summation of the attitude domains being assessed. Only a group of items that are found to be reliable and valid should be added together or averaged to calculate a total score that represents a dimension, construct, or factor.

Next, *semantic-differential scales* utilize a list of contrasting bipolar adjectives with seven rating spaces between the two of them (Osgood et al. 1957). The respondent is asked to mark which end of the rating scale is most similar to their opinion, feeling, or view using the adjective pairs provided (see Fig. 3). Examples of the descriptive rating scale adjective pairs for a semantic-differential scale might include big–small, expensive–inexpensive, ugly–beautiful, happy–sad, curious–apathetic, personal–public, simple–complex, dull–exciting, or indispensable–unnecessary. For scoring purposes, a numerical rating is assigned to each of the spaces, with potential score ranges being 1, 2, 3, 4, 5, 6, 7 or −3, −2, −1, 0, +1, +2, +3.

The semantic-differential rating scale approach provides data about three components of attitudes, those being evaluation, potency (e.g., strength), and activity. *Evaluation* refers to whether a respondent views the attitude theme in a negative or positive light. *Potency* denotes how strongly a respondent feels about the attitude topic. Lastly, *activity* indicates whether the attitude topic is viewed as active or passive. Semantic-differential scales are relatively straightforward to complete but can be prone to positional response bias (Russell 2011).

A variation of a Likert scale and a semantic-differential scale is a *numerical rating scale*. A numerical rating scale provides numbers instead of a space/line or written descriptors as response options to indicate response positions (Desselle 2005). The

Please rate your experience of completing a clinical fieldwork placement during your previous semester at university.

Challenging	__ __ __ __ __ __ __	Effortless
Confusing	__ __ __ __ __ __ __	Clear
Dull	__ __ __ __ __ __ __	Absorbing
Unprofessional	__ __ __ __ __ __ __	Professional
Poor quality	__ __ __ __ __ __ __	High quality
Unpleasant	__ __ __ __ __ __ __	Pleasant
Makes exercise harder	__ __ __ __ __ __ __	Makes exercise easier
Difficult to control	__ __ __ __ __ __ __	Easy to control
Discouraging	__ __ __ __ __ __ __	Motivating
Complex	__ __ __ __ __ __ __	Simple

Fig. 3 Example of a semantic differential scale. (© D. Stevens, 2019)

A constant-sum scale requires participants to divide a fixed number of points among several attributes corresponding to their relative importance.

Divide 100 points among the following characteristics of fieldwork placement and how important they are to you.

____ Location to your home

____ Traveling time to placement

____ Communication from supervisor

____ Workplace culture

____ Staff attitude toward placements

____ 100 Points

Fig. 4 Example of a constant-sum scale. (© D. Stevens, 2019)

numerical rating scale uses opposing adjectives in the same way as a semantic differential scale but swaps the empty spaces with numbers.

Single-item direct attitude scales are used by researchers to measure a targeted construct via a single targeted question. However, while there may be benefits in relation to brevity and reduced participant response burden, single-item attitude scales are problematic. For instance, *acquiescence bias* refers to the fact that when respondents read an item and then have to decide on the spot if they agree or disagree with it, this can cause an overestimation in the ratings (Fabrigar et al. 2005).

Another type of scale is the *constant-sum scale* where respondents are asked to divide a specified number up into smaller amounts to indicate the relative or degree of importance among a list of qualities or traits (Dudek and Baker 1956). The default for the specified number to be divided up is either 50 or 100 (see Fig. 4). The constant-sum approach can be used as a rating scale or as a sorting activity with cards. With this scaling approach, as the number of response categories increase, the technique becomes increasingly complex for the respondent to complete (Desarbo et al. 1995). One prerequisite skill that respondents need to complete attitude items that utilize the constant-sum scale approach is the mathematical ability to add and subtract.

Using a pictorial approach to attitude assessment, one can use a variety of *graphic rating scales.* This involves measuring attitudes where respondents rate a graphical picture of an object that may or may not contain a number that is along a continuum. When completing a graphic scale, participants are allowed to select any point along the rating range to signpost their attitude. Usually, a participant's score is calculated by measuring the length of the rating scale line to the closest millimeter where he/she has placed a mark. Typically, the graphic continuum should be 100 mm in length so that a score out of 100 can be generated. These can also be referred to as a visual analogue scale. Picture or figurine response options are also available including a ladder scale (DeCastellarnau 2017), a thermometer scale (Wilcox et al. 1989) (see Fig. 5), LEGO Pictorial scale (Obaid et al. 2015), and a happy-face scale (Jackson et al. 2006; Hicks et al. 2001) (see Figs. 6 and 7).

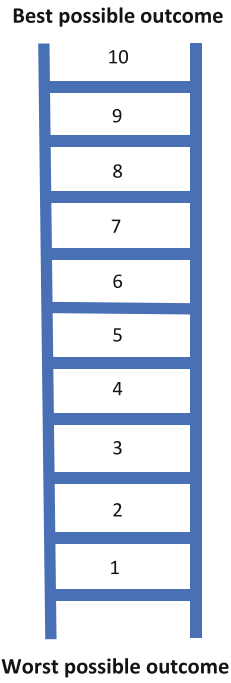

Fig. 5 Example of a ladder rating scale. (© D. Stevens, 2019)

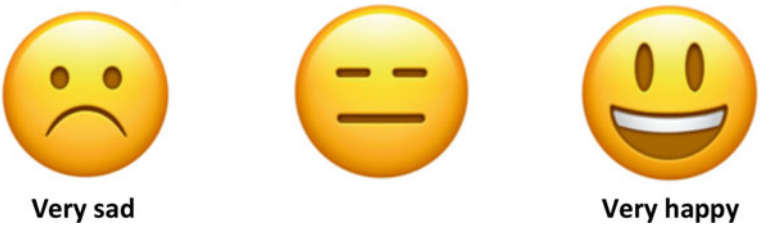

Fig. 6 Example of a simple facial rating scale. (© D. Stevens, 2019)

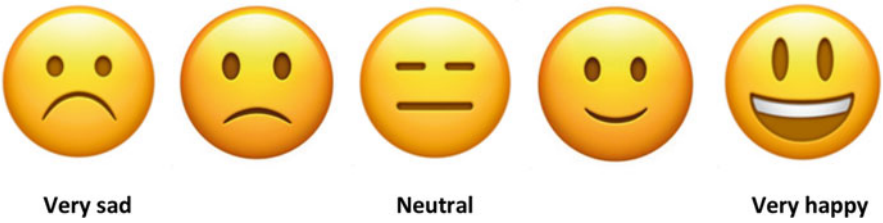

Fig. 7 Example of a more complex facial rating scale. (© D. Stevens, 2019)

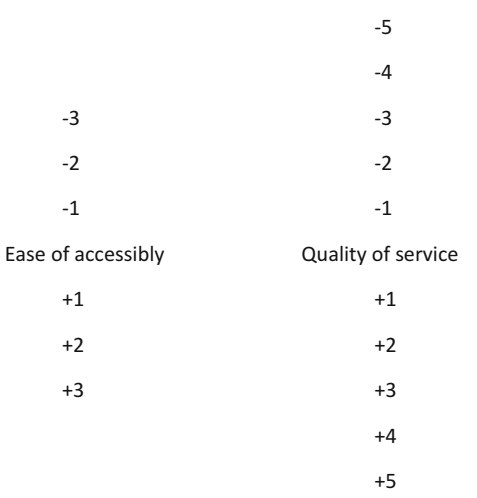

Fig. 8 Two examples of a Stapel scale. (© D. Stevens, 2019)

Another version of a rating scale is the *Stapel scale* (Russell 2011) (see Fig. 8). It can be used as an alternative to a semantic-differential scale and involves the use of one single adjective. The stimulus adjective is placed in the center of an even number of numerical values, typically a range of −3 to +3 or −5 to +5. The rating scale gauges how close or far away from the target adjective an opinion or attitude is sensed or felt to be by the respondent. The one advantage of the Stapel scale is that it is easier to construct and administer.

Qualitative Approaches to Exploring Attitudes

Qualitative research approaches are useful for understanding attitudes by providing a means to study human experiences, feelings, emotions, perceptions, and the meanings a target audience may give to a behavior or a specific topic (Liamputtong 2013). Four commonly used methods to collect qualitative information include in-depth interviews, focus group discussions, observation, and record keeping (Liamputtong 2013; Silverman 2010). An in-depth interview is usually conducted face-to-face via one-on-one interactions between an interviewer and an interviewee where the perspectives and attitudes that an individual may have on a chosen topic are explored. A focus group typically involves a small group of six to ten people who usually have similar experiences, concerns, or cultural or social background participating in a planned discussion on a targeted topic. Observation refers to information that is gathered by observing people's behaviors within their natural environments of their daily life. Record keeping uses existing documentation, such as existing interview transcripts, diaries, journals, or newspapers to collect relevant data.

Of the many different methods available for analyzing qualitative information, content analysis, thematic analysis, narrative analysis, discourse analysis, and

grounded theory are five of the most widely used techniques (Liamputtong 2009). *Content analysis* is used to organize, classify, or sort the qualitative information into categories to summarize and extract meaning from the information. *Thematic analysis* methods critically review the qualitative information and focuses on examining and identifying patterns or themes of meaning within collected information. *Narrative analysis* involves making sense of stories recounted by one or more respondents and considering individual respondent's background and experiences to find answers for a question. *Discourse analysis* is a method to analyze conversations (both written and spoken) between people in their social context. *Grounded theory* involves understanding a phenomenon through systematic data collection and data analysis to develop a new theory based on the data.

To ensure that qualitative information truly represents a picture of one's attitude(s), a rigorous research process is imperative. Rigor refers to the quality of being very thorough, careful, exact, and accurate, and trustworthiness is the model used to appraise the rigor of the qualitative research process (Carasco and Lucas 2015). Lincoln and Guba (1985) introduced four criteria to establish trustworthiness, including credibility, transferability, dependability, and confirmability. *Credibility* ensures that qualitative research findings are 'believable,' meaning the degree to which the researchers correctly represent the respondents' views. Many techniques can be used to address credibility, including prolonged engagement, persistent observations, data collection triangulation, researcher triangulation, peer debriefing, referential adequacy, and member checking. Among these techniques, triangulation and member checking are most commonly used.

Transferability is the generalization of the findings to another situation or context. This can be established by providing thorough descriptions of the study context so people can decide if the information is transferable. To achieve *dependability*, the qualitative process needs to be logical and documented with sufficient detail so that another researcher could easily replicate the process, understand and follow the decisions trail, and achieve the same or similar conclusions (Lincoln and Guba 1985). *Confirmability* critiques the level of confidence that the researchers' interpretations and conclusions are based on the information collected. An audit trail details the research process (such as rationale for the choice of theory, methodology, data analysis, and interpretations of the data) and is a popular method for establishing dependability and confirmability (Tobin and Begley 2004).

Qualitative approaches are useful when conceptualizing an attitude towards a specific issue and can be used to inform and improve the designs of quantitative attitude measurement scales such as those completed by health professional students. Qualitative information related to attitudes is able to provide in-depth understanding and interpretation of the results generated from attitude measurement scales. Therefore, both qualitative approaches and quantitative attitude measurement scales are indispensable and complement each other for measuring attitudes. A mixed-methods approach integrating both qualitative and quantitative attitude data provides an informed perspective for comprehensively measuring and understanding attitudes particularly in relation to the measurement of attitudes in clinical education contexts.

Features of Quality Attitude Measures to Consider

Reid (2006, p. 20) said that "absolute measures of attitudes are impossible. Only comparisons can be made." There are several general features of measurement that quality attitude scales should exhibit. Quantitative attitude measures need to be valid, reliable, replicable, responsive to change, and straightforward to complete, explain, and comprehend (Fabrigar et al. 2005). In measurement terms, establishing the validity of an attitude scale is the first thing that should be addressed before considering its other psychometric properties. The items that make up an attitude scale need to adequately represent the construct, trait, or feature it claims to measure; this is referred to as construct, factorial, or structural *validity*. If a scale claims to measure nursing students' attitudes to completing fieldwork placements in a mental health setting, then the items need to be reflective of that domain.

An attitude scale needs to generate consistent results, otherwise known as *reliability*. For example, if a group of medical students completed a measure of empathetic attitudes towards patients in palliative care settings on two occasions during the first and third week of a semester, then the results should be relatively consistent or repeatable. There are several types of reliability that are often reported about a scale including test-retest validity, internal consistency, and split-half reliability. The following strategies are recommended to ensure quality reliability results are obtained: using large samples, careful pretesting, ensuring the conditions of the scale completed are socially desirable and that a sufficient number of items are used to allow cross-check questions in the format of repeated questions and similar questions.

A good quality attitude scale should also be *replicable*. One fieldwork educator should be able to utilize an anxiety attitude scale with a group of nursing students commencing a placement at a children's hospital, and another educator should be able to administer the same attitude scale to a group of physiotherapy students at a subacute rehabilitation center. In other words, there should be no variation in how well the anxiety attitude scale measures its target factors with the two different student groups.

Another important feature of a quality attitude scale is that it should be sensitive to small gradations of change in the target variable being assessed. This is referred to as *responsiveness to change* (Zikmund et al. 2013). This is particularly relevant if an attitude scale is being used as an outcome measure or being used to measure change in a group of participants over time. Finally, an attitude scale should be *simple* to administer, understand, complete, and explain. If an attitude scale is going to be used by a variety of researchers, understood by a variety of clinical educators, and completed by a range of different respondent groups, then its *clinical utility* needs to be ensured (Zikmund et al. 2013).

Attitudinal scales can be susceptible to different types of response bias including: (i) *bias to middle responding* where participants avoid extreme responses on a rating scale; (ii) *halo effect* where a respondent allows prejudices and preconceptions to impact his/her answers; (iii) *Hawthorn effect* where respondents' answers are influenced based on positive encounters between the researchers and participants

when conducting a study; (iv) *social desirability* effect where respondents want to appear capable, competent, worthy, unprejudiced, open-minded, democratic, or in a positive light based on their answers; or (v) *response set* which involves respondents' inclination to constantly agree or disagree to a set of items (Smith and Noble 2014). When selecting an existing attitude scale to use or designing a new attitude measure, it is essential to consider the types of biases it might be susceptible to (Pannucci and Wilkins 2010).

Constructing Attitude Measurement Scales

When considering the measurement of attitudes, it is suggested that researchers investigate whether a valid attitude scale that assesses the desired attitude construct is already available. In the event that the needed attitude scale does already not exist, then a valid, reliable, and responsive quantitative measure composed of items that are representative of the target attitude construct is required. The development of such a scale should follow a number of steps (Carpenter 2018; Streiner et al. 2015):

(a) Conceptualization: identifying and defining the attitude construct(s) to be measured.
(b) Operationalization: generate items for the attitude scale through a comprehensive review of the relevant cognate research and theoretical literature, conferring with known content experts, and reviewing existing measures; this provides a source of potential items and ensures the content validity of the scale is broad, inclusive, and comprehensive.
(c) Scaling: selection of the rating scale method that will be adopted, for example, will a Likert, Stapel or semantic-differential scale be selected?
(d) Formatting: working version of the attitude scale is reviewed by content experts and items are pretested on respondents with feedback sought; working version of the scale is revised based on feedback.
(e) Refinement: item reduction techniques are implemented and viable attitude factors are extracted using a Classical Test Theory approach such as exploratory factor analysis (Carpenter 2018; Streiner et al. 2015).
(f) Dimensionality investigation: evaluation of dimensionality and construct validity of attitude scale factors is completed using an Item Response Theory approach such as the Rasch Measurement Model (Carpenter 2018; Streiner et al. 2015).
(g) Validity enhancement: other aspects of validity can be examined such as convergent and divergent validity, concurrent validity, predictive validity, and discriminative validity.
(h) Reliability examination: evaluation of the attitude scale's reliability completed: test-retest reliability, internal consistency, split-half reliability, and alternate form reliability.
(i) Consideration of other psychometric properties: other aspects of the attitude scale are evaluated including responsiveness to change, clinical utility, and cross-cultural applicability.

(j) Presentation and ongoing fine-tuning: psychometric properties of the attitude scale need to be summarized, analyzed, and reported; this involves the ongoing revision and critique of the attitude scale to ensure currency, relevance, sensitivity, and accuracy.

The development, validation, and refinement of any attitude scale is an ongoing, dynamic process. In sum, it is a complex, time-consuming, and resource-intensive process. However, there is an ongoing need for high-quality attitude measures with accompanying evidence of validity, reliability, and clinical utility that academic and clinical educators can use with health professional students completing clinical education placements.

Relevance of Attitudes to Health Professional Clinical Education

Education methods that are used to promote, develop, inform, or modify health professional students' attitudes can broadly be categorized into three main areas: traditional education, simulation-based education, and practice-based education. Traditional methods of education include face-to-face lectures, tutorials, and workshops. Simulation-based education methods include but are not limited to the use of case studies, vignettes, role play, immersive scenarios, and actors, while practice-based education involves the use of real patients or consumers in context.

Traditional Methods Used to Develop Attitudes

Many universities incorporate content into their health professional courses aimed at developing attitudes that are critical in the delivery of health care. The incorporation of lectures, tutorials, and workshops have been used to develop positive attitudes around patient safety (Walpola et al. 2015), empathy (Miller 2013), sexual health (Gerbild et al. 2018), and communication (Lichtenstein et al. 2018). In a survey of 23 medical schools in the United Kingdom (Stephensen et al. 2006), the components of curricula that were seen as supporting attitudinal learning included:

- Involving students in setting objectives related to attitudes
- Being explicit about codes of behavior
- Student learning contracts
  Formal teaching of communication, ethics, and diversity
- Problem-based learning
- Reflective practice.

Walpola et al. (2015) describe the successful introduction of a program embedded into a pharmacy course aimed at developing positive attitudes towards patient safety. The program consisted of two lectures and a tutorial guided by the WHO Patient Safety Curriculum Guide (2011). Following the program, students' attitudes

improved significantly around errors, questioning behavior, and open disclosure. Miller (2013) developed audiovisual material containing the narratives of people with disabilities which was presented to health care students who were asked to reflect on what they saw. Following the program, students reported a significantly more positive attitude towards people with disability. Gerbild et al. (2018) developed a two-week course for health professional students based on sexual health and rehabilitation, including the examination of norms, values, and attitudes towards sexuality and sexuality at different stages in life. These students reported a sustained change in attitude towards addressing sexual health in their future profession.

Simulation-Based Education

Simulation-based education has been described as an artificial representation of a real-world process to achieve educational goals through experiential learning (Al-Elq 2010). Simulation has been successfully used in many health professions, including medicine (Peltan et al. 2015), occupational therapy (Imms et al. 2018), and nursing (Wang et al. 2015) to teach clinical skills. Simulation offers students an opportunity to learn clinical skills in a way that encourages deep learning while eliminating associated risks to patients. Simulation has also been used to develop and modify health professional students' attitudes towards interprofessional learning (Yang et al. 2017; Lawlis et al. 2017), to promote empathy in specific clinical groups (Chen et al. 2015), and attitudes towards aging (Lucchetti et al. 2017).

For example, when a multidisciplinary simulated ward experience was conducted using Mask-Ed™ characters and simulated case conferences, improvements were seen in interprofessional collaboration including improved knowledge of and attitudes towards multidisciplinary roles in the care of patients (Lawlis et al. 2017). Chen et al. (2015) used a simulated game (referred to as the Geriatric Medication Game) to show improvement in empathy towards older people in pharmacy students, particularly when thinking about how disabilities can affect older people and how older people may be treated differently in the health care system. In the Geriatric Medication Game, students are required to role play being an older adult presenting with a physical, financial, or psychological problem who engages with the health care system and completes several tasks (Chen et al. 2015). At the end of the game, students are asked to reflect on any stereotypes or misperceptions they may have had about older adults. Lucchetti et al. (2017) used a game simulating some of the physiological changes in aging to improve attitudes and empathy towards older people. Attitude data was collected using self-report scales about their attitudes towards older adults, empathy, knowledge about aging, and overall cognitive knowledge (Lucchetti et al. 2017).

Practice-Based Education

Just as in real life, practice-based education is seen as important in developing and practicing clinical skills and the teaching of attitudes that are critical for safe and ethical practice in health care. Meeting, intervening, and generally being involved with patients' and consumers' care have been shown to improve attitudes around dementia (Roberts and Noble 2015), stigma (Patten et al. 2012), and attitudes towards home caring (Yamanaka et al. 2018).

Patten et al. (2012) invited people with lived experience of mental illness to share their experiences with pharmacy students in an interactive format, following which students reported a significant reduction in stigma towards people with mental illness. In another study, exposing medical students to home care interventions for 2 weeks significantly improved their attitude toward home care (Yamanaka et al. 2018), while Roberts and Noble (2015) demonstrated that medical students' attitudes towards people with dementia improved after engaging with dementia patients in a structured, museum-based arts program.

Exposure to people with a variety of clinical diagnoses and cultural backgrounds may improve attitudes in specific circumstances but the opposite may also occur. That is, continual exposure to the same groups without critical reflection of the attitudes that shape the therapeutic relationship may not be conducive to developing positive attitudes. For example, health professionals are expected to display compassion towards patients and consumers but continuous and intense exposure to patients has been shown to reduce the level of compassion in nursing (Zhang et al. 2018), medicine (Kleiner and Wallace 2017), and among other health care workers (Cocker and Joss 2016; Kopera et al. 2015). It is, therefore, important for students and clinicians to continually reflect on how attitudes shape and affect the therapeutic relationship with patients and consumers.

Types of Attitudes Relevant to Health Professional Education

All health care professions expect their members to treat each other and the people they treat in a way that is fair, empathic, and respectful. Most professions enshrine these expectations in a code of ethics that explicitly describes the behaviors and attitudes that are expected of their members. For example, doctors are expected to treat patients as individuals, and to do so with respect, dignity, and compassion (Australian Medical Association 2019). Occupational therapists need to ensure the privacy, dignity, and autonomy of the people they see (Occupational Therapy Australia 2019), while nurses are expected to treat all people with compassion and dignity regardless of their social, economic, or health status (American Nurses Association 2019). Inherent in the expected behaviors and attitudes described in professions' codes of ethics is the maxim that health care professionals should respect the diversity of the people they encounter. Health care professionals should treat all people respectfully regardless of race, gender, religion, age, sexual orientation, or any other factor that differs from their own culture.

Negative attitudes towards specific diagnostic groups also exist in the general community. For example, people with mental illness are often stigmatized as being violent, dangerous, and unpredictable (Hinshaw and Stier 2008); people with addictions are seen as unwilling and disinterested in ceasing their substance abuse (Sheals et al. 2016); older people are often regarded as frail, unfriendly, and a burden on society (Kusumastuti et al. 2017). Health care professionals are expected to engage with people presenting with a range of diagnoses and from different backgrounds in a nonjudgmental and caring way. However, the literature reports entrenched negative attitudes towards diagnostic groups among health care professionals and students. For example, Chapman et al. (2013) describe how doctors may unwittingly perpetuate health inequalities through implicit biases around race, age, and weight. Health care professionals and students are reported to stereotype, hold negatively implicit attitudes about, and stigmatize people with mental illness (Jacq et al. 2016; Murphy et al. 2016). Negative attitudes and/or implicit bias have also been reported in other diagnostic groups such as the elderly (Kusumastuti et al. 2017), obese people (Sabin et al. 2015a), people with substance abuse (Sheals et al. 2016), and people from marginalized groups such as those from the lesbian-gay-bisexual-transsexual-intersex (LGBTI) community (Sabin et al. 2015b).

Although entrenched negative attitudes have been reported in the health professions and among health care students, programs have been successful in changing attitudes. For example, a simulation game was used to improve pharmacy students' empathy for older people (Lucchetti et al. 2017), while another used educational films to improve trainee dietitians' and doctors' attitudes towards obese people (Swift et al. 2013). Other educational programs have reported success in changing attitudes towards people with mental illness (Ng et al. 2017), patients with pain (Puri Singh et al. 2015), and from the LGBTI community (Tsingos-Lucas et al. 2016; Sekoni et al. 2017).

As mentioned previously, some attitudes are deeply entrenched and are hard to modify (Reid 2006). When these attitudes adversely affect a student's performance or lead to poor patient outcomes, educators have a responsibility to address the underlying entrenched attitude. Students may not be aware of the effect their entrenched attitudes are having and may need strategies to identify and address any negative outcomes. A successful way of allowing students to identify how their own beliefs, values, and experiences positively and negatively affect interactions with patients is through reflective practice. Tsingos-Lucas et al. (2016) showed that the integration of reflective activities into a pharmacy curriculum increased the reflective capacity of students. Reflective learning activities such as reflective writing in portfolios and journals (Hogg et al. 2011) have been used to develop a range of professional attributes including clinical reasoning (Croke 2004) and communication skills (Lonie 2010). Inherent in reflecting on clinical reasoning and communication skills within a diverse population is examination of how and why decisions are made. Engaging in this sort of reflection can facilitate students to challenge and question how some of their entrenched attitudes may affect the therapeutic relationship and their interactions with patients.

Better patient outcomes have been identified when health care is delivered by competent interdisciplinary teams (Helitzer et al. 2011). One of the aims of interprofessional education is for students to develop an understanding of the roles and responsibilities of other health care disciplines. From this understanding, positive attitudes are developed regarding the roles and responsibilities of other disciplines which ultimately lead to improvements in patient care. Interdisciplinary teaching is carried out in several ways, including simulation (Brock et al. 2013), immersion or exposure to interprofessional teams (Jacobsen and Lindqvist 2009), teacher-facilitator reflection (Hylin et al. 2007), and shared learning where students share their interprofessional experiences with peers (Hutchings et al. 2013).

The following section highlights selected studies from the domain of attitude research in health care education. The list cited in Table 1 is not meant to be exhaustive but rather highlights the breadth and scope of the research in terms of the disciplines involved, the attitudes being researched, and novel methodologies used.

Conclusion

The role of attitudes in the clinical education of health professional students is clearly a relevant research topic. In their interactions with clients and families, students as well as other professional staff are required to demonstrate appropriate and professional attitudes. Students need to be self-aware and possess the ability to modify their attitudes when needed according to the environmental cues they receive. In this chapter, a number of relevant topics have been covered including how attitudes are defined; how attitudes develop and evolve; quantitative and qualitative data collection of attitudes; the steps to go through to construct a sound attitude scale; and, finally, the relevance of attitude measurement within health professional student education.

Table 1 Examples of attitude research completed with health professional students

Authors	Study location	Sample size and health professional student groups involved	Data gathering tools	Methodology	Implications for practice
Sullivan and Mendonca (2017)	United States of America	n = 32; first year occupational therapy students n = 30; second year occupational therapy students n = 6; first year public health students	Attitudes Toward Intellectual Disabilities (Morin et al. 2013)	Nonrandomized pretest posttest following lecture and fieldwork	Empirical work examining if a lecture or fieldwork impacts attitude change. Positive change in attitude towards people with an intellectual disability occurred following fieldwork only. There was no change following a disability awareness lecture
Patterson et al. (2018)	Australia	n = 23; nursing students who completed a nontraditional fieldwork placement n = 27; nursing students who completed a traditional placement	Mental Health Clinical Placement Survey for First Day of Placement (Hayman-White and Happell 2005)	Nonexperimental comparative approach	Paper explores the impact of diverse placement settings on attitude change within mental health settings for nursing students. Students who completed nontraditional placements self-reported more positive attitudes and better preparedness towards mental health nursing; decreased anxiety and negative stereotyping of mental illness; and the same level of desire to pursue future career in mental health nursing
Oren et al. (2018)	Turkey	n = 650; midwifery students	Purpose developed questionnaire plus Sexuality Attitudes and Beliefs Survey (Reynolds and Magnan 2005)	Descriptive cross-sectional survey	Students were aware of the importance of sexual counselling and reported positive attitudes towards the taboo subject for the cohort. However, students felt that a lack of training prevented

(continued)

Table 1 (continued)

Authors	Study location	Sample size and health professional student groups involved	Data gathering tools	Methodology	Implications for practice
					them from providing a service, particularly to minority groups
Sim and Mackenzie (2016)	Australia	n = 9; occupational therapy students	Semistructured interviews	Qualitative; grounded theory approach	This paper is an example of how a qualitative research approach can demonstrate sustained attitude change from a placement experience. It also presents a framework to assist students and professionals to prepare for placements in developing countries
Kritsotakis et al. (2017)	Greece	n = 1007; nursing, social work and medical students	Attitude Toward Disabled Persons Form B (Yuker and Block 1986) and Community Living Attitude Scale – Intellectual Disability (Henry et al. 1998)	Descriptive cross-sectional survey	A descriptive paper examining attitudes of nursing, social work, and medical students towards people with a disability. The paper provides a statistical summary of the results from all previous studies that used the data collection tools. The study found that students had poor overall attitudes towards people with a disability, prompting a recommendation for educational reform

Van de Pol et al. (2018)	Netherlands	n = 36; medical students	Essays and focus groups	Qualitative content analysis	Previous research of medical students' attitudes indicated a negative association with geriatric medicine and care for older persons. This study utilizes qualitative methods to understand the reasons for students' attitudes and perceptions. The paper identified that teaching the complexity of clinical practice and focusing on professional identity may develop positive attitudes towards geriatric medicine and encourage graduates to work within the area of elderly care

References

Al-Elq AH. Simulation-based medical teaching and learning. J Fam Community Med. 2010;17(1):35–40. https://doi.org/10.4103/1319-1683.68787.

Allport GW. Attitudes. In: Murchison CM, editor. Handbook of social psychology. Winchester: Clark University Press; 1935. p. 798–844.

American Nurses Association. American Nurses Association code of ethics 2015. http://nursing.rutgers.edu/civility/ANA-Code-of-Ethics-for-Nurses.pdf. Accessed 10 Jan 2019.

Anastasi C. Psychological testing. 6th ed. New York: Macmillan; 1988.

Australian Medical Association. AMA code of ethics 2016. https://ama.com.au/articles/code-ethics-2004-editorially-revised-2006-revised-2016. Accessed 10 Jan 2019.

Boateng GO, Neilands TB, Frongillo EA, Melgar-Quiñonez HR, Young SL. Best practices for developing and validating scales for health, social, and behavioral research: a primer. Front Public Health. 2018;6:149. https://doi.org/10.3389/fpubh.2018.00149.

Brock D, Abu-Rish E, Chiu CR, Hammer D, Wilson S, Vorvick L, et al. Interprofessional education in team communication: working together to improve patient safety. BMJ Qual Saf. 2013;22(5):414–23. https://doi.org/10.1136/postgradmedj-2012-000952rep.

Carasco JA, Lucas K. Workshop synthesis: measuring attitudes; quantitative and qualitative methods. Transp Res Procedia. 2015;11:165–71. https://doi.org/10.1016/j.trpro.2015.12.014.

Carpenter S. Ten steps in scale development and reporting: a guide for researchers. Commun Methods Meas. 2018;12(1):25–44. https://doi.org/10.1080/19312458.2017.1396583.

Chapman EN, Kaatz A, Carnes M. Physicians and implicit bias: how doctors may unwittingly perpetuate health care disparities. J Gen Intern Med. 2013;28(11):1504–10. https://doi.org/10.1007/s11606-013-2441-1.

Chen A, Yehle M, Plake K. Impact of aging simulation game on pharmacy students' empathy for older adults. Am J Pharm Educ. 2015;79(5):65. https://doi.org/10.5688/ajpe79565.

Cocker F, Joss N. Compassion fatigue among healthcare, emergency and community service workers: a systematic review. Int J Environ Res Public Health. 2016;13(6):618. https://doi.org/10.3390/ijerph13060618.

Crano WD, Gardikiotis A. Attitude formation and change. In: Wright J, editor. International encyclopedia of the social & behavioral sciences. 2nd ed. Amsterdam: Elsevier; 2015. p. 169–74.

Croke E. The use of structured reflective journal questions to promote fundamental development of clinical decision-making abilities of the first-semester nursing student. Contemp Nurse. 2004;17(1–2):125–36.

DeCastellarnau A. A classification of response scale characteristics that affect data quality: a literature review. Qual Quant. 2017;52(4):1523–59. https://doi.org/10.1007/s11135-017-0533-4.

Desarbo W, Ramaswamy V, Chatterjee R. Analyzing constant-sum multiple criterion data: a segment-level approach. J Mark Res. 1995;32:222–32. https://doi.org/10.2307/3152050.

Desselle SP. Construction, implementation, and analysis of summated rating attitude scales. Am J Pharm Educ. 2005;69(5):Article 97. https://doi.org/10.5688/aj690597.

Dudek FJ, Baker KE. The constant-sum method applied to scaling subjective dimensions. Am J Psychol. 1956;69(4):616–24. https://doi.org/10.2307/1419084.

Eagly AH, Chaiken S. The psychology of attitudes. Orlando: Harcourt Brace Jovanovich College; 1993.

Fabrigar LR, Krosnick JA, MacDougall BL. Attitude measurement. In: Brock TC, Green MC, editors. Persuasion: psychological insights and perspectives. Thousand Oaks: Sage; 2005. p. 17–40.

Fishbein M. An investigation of the relationships between beliefs about an object and the attitude towards that object. Hum Relat. 1963;16(1):233–40. https://doi.org/10.1177/001872676301600302

Gerbild H, Larsen C, Rolander B, Areskoug-Josefsson K. Does a 2-week sexual health in rehabilitation course lead to sustained change in students' attitudes? A pilot study. Sex Disabil. 2018;36(4):417–35. https://doi.org/10.1007/s11195-018-9540-1.

Guyer JJ, Fabrigar LR. Attitudes and behavior. In: Wright J, editor. International encyclopedia of the social & behavioral sciences. 2nd ed. Amsterdam: Elsevier; 2015. p. 162–7.

Hahn A, Judd CM, Hirsh HK, Blair IV. Awareness of implicit attitudes. J Exp Psychol Gen. 2013;143(3):1369–92. https://doi.org/10.1037/a0035028.

Hayman-White K, Happell B. Nursing students' attitudes toward mental health nursing and consumers: psychometric properties of a self-report scale. Arch Psychiatr Nurs. 2005;19(4):184–93. https://doi.org/10.1016/j.apnu.2005.05.004.

Helitzer DL, Lanoue M, Wilson B, Hernandez BUD, Warner T, Roter D. A randomized controlled trial of communication training with primary care providers to improve patient-centeredness and health risk communication. Patient Educ Couns. 2011;82(1):21–9. https://doi.org/10.1016/j.pec.2010.01.021.

Henry D, Keys C, Jopp D. The community living attitude scale – reference manual (Tech rep). Chicago: Department of Disability and Human Development, University of Illinois at Chicago; 1998.

Hicks CL, Baeyer CLV, Spafford PA, Korlaar IV, Goodenough B. The faces pain scale – revised: toward a common metric in pediatric pain measurement. Pain. 2001;93(2):173–83.

Hinshaw SP, Stier A. Stigma as related to mental disorders. Annu Rev Clin Psychol. 2008;4:367–93. https://doi.org/10.1146/annurev.clinpsy.4.022007.141245.

Hogg G, Ker J, Stewart F. Over the counter clinical skills for pharmacists. Clin Teach. 2011;8(2):109–13. https://doi.org/10.1111/j.1743-498X.2011.00437.x.

Hutchings M, Scammell J, Quinney A. Praxis and reflexivity for interprofessional education: towards an inclusive theoretical framework for learning. J Interprof Care. 2013;27(5):358–66. https://doi.org/10.3109/13561820.2013.784729.

Hylin U, Nyholm H, Mattiasson AC, Ponzer S. Interprofessional training in clinical practice on a training ward for healthcare students: a two-year follow-up. J Interprof Care. 2007;21(3):277–88. https://doi.org/10.1080/13561820601095800.

Imms C, Froude E, Chu E, Sheppard L, Darzins S, Guinea S, et al. Simulated versus traditional occupational therapy placements: a randomised controlled trial. Aust Occup Ther J. 2018;65(6):556–64. https://doi.org/10.1111/1440-1630.12513.

Jackson D, Horn S, Kersten P, Turner-Stokes L. Development of a pictorial scale of pain intensity for patients with communication impairments: initial validation in a general population. Clin Med (Lond). 2006;6(6):580–5. https://doi.org/10.7861/clinmedicine.6-6-580.

Jacobsen F, Lindqvist S. A two-week stay in an interprofessional training unit changes students attitudes to health professionals. J Interprof Care. 2009;23(3):242–50. https://doi.org/10.1080/13561820902739858.

Jacq KD, Norful AA, Larson E. The variability of nursing attitudes toward mental illness: an integrative review. Arch Psychiatr Nurs. 2016;30(6):788–96. https://doi.org/10.1016/j.apnu.2016.07.004.

Katz D. The functional approach to the study of attitudes. Public Opin Q. 1960;24(2):163–204. https://doi.org/10.1086/266945.

Kleiner S, Wallace JE. Oncologist burnout and compassion fatigue: investigating time pressure at work as a predictor and the mediating role of work-family conflict. BMC Health Serv Res. 2017;17(1):639. https://doi.org/10.1186/s12913-017-2581-9.

Kopera M, Suszek H, Bonar E, Myszka M, Gmaj B, Ilgen M, et al. Evaluating explicit and implicit stigma of mental illness in mental health professionals and medical students. Community Ment Health J. 2015;51(5):628–34. https://doi.org/10.1007/s10597-014-9796-6.

Kritsotakis G, Galanis P, Papastefanakis E, Meidani F, Philalithis AE, Kalokairino UA, et al. Attitudes towards people with physical or intellectual disabilities among nursing, social work and medical students. J Clin Nurs. 2017;26(23–24):4951–63. https://doi.org/10.1111/jocn.13988.

Kusumastuti S, van Fenema E, Polman-van Stratum E, Achterberg W, Lindenberg J, Westendorp R. When contact is not enough: affecting first year medical students' image towards older persons. PLoS One. 2017;12(1):e0169977. https://doi.org/10.1371/journal.pone.0169977.

Lawlis T, Frost J, Eckley D, Isbel S, Kellett J. Enhancing health care student inter-professional learning through a pilot simulation ward experience using Mask-Edtm (KRS Simulation). Aust J Clin Educ. 2017;2(1):Article 5. https://doi.org/10.1186/s12909-017-0872-9.

Liamputtong P. Qualitative data analysis: conceptual and practical considerations. Health Promot J Austr. 2009;20:133–9. https://doi.org/10.1071/HE09133.

Liamputtong P. Qualitative research methods. South Melbourne: Oxford University Press; 2013.

Lichtenstein NV, Haak R, Ensmann I, Hallal H, Huttenlau J, Krämer K, et al. Does teaching social and communicative competences influence dental students' attitudes towards learning communication skills? A comparison between two dental schools in Germany. GMS J Med Educ. 2018;35(2):Doc18. https://doi.org/10.3205/zma001165.

Lincoln Y, Guba EG. Naturalistic inquiry. Newbury Park: Sage; 1985.

Lonie JM. Learning through self-reflection: understanding communication barriers faced by a cross-cultural cohort of pharmacy students. Curr Pharm Teach Learn. 2010;2(1):12–9. https://doi.org/10.1016/j.cptl.2009.12.002.

Lovelace M, Brickman P. Best practices for measuring students' attitudes toward learning science. CBE Life Sci Educ. 2013;12(4):606–17. https://doi.org/10.1187/cbe.12-11-0197.

Lucchetti AL, Lucchetti G, de Oliveira IN, Moreira-Almeida A, da Silva Ezequiel O. Experiencing aging or demystifying myths? Impact of different "geriatrics and gerontology" teaching strategies in first year medical students. BMC Med Educ. 2017;17(1):35. https://doi.org/10.1186/s12909-017-0872-9.

Mackie G, Moneti F, Shakya H, Denny E. What are social norms? How are they measured? San Diego: Center on Global Justice, University of California/UNICEF; 2015.

Maitland A. Attitude measurement. In: Lavrakas PJ, editor. Encyclopedia of survey research methods. Thousand Oaks: Sage; 2011. p. 1–4. https://doi.org/10.4135/9781412963947.n25.

Miller SR. A curriculum focused on informed empathy improves attitudes toward persons with disabilities. Perspect Med Educ. 2013;2(3):114–25. https://doi.org/10.1007/s40037-013-0046-3.

Morin D, Crocker AG, Beaulieu-Bergeron R, Caron J. Validation of the attitudes toward intellectual disability – ATTID questionnaire. J Intellect Disabil Res. 2013;57(3):268–78. https://doi.org/10.1111/j.1365-2788.2012.01559.x.

Murphy AL, Phelan H, Haslam S, Martin-Misener R, Kutcher SP, Gardner DM. Community pharmacists' experiences in mental illness and addictions care: a qualitative study. Subst Abuse Treat Prev Policy. 2016;11:6. https://doi.org/10.1186/s13011-016-0050-9.

Ng YP, Rashid A, O'Brien F. Determining the effectiveness of a video-based contact intervention in improving attitudes of Penang primary care nurses towards people with mental illness. PLoS One. 2017;12(11):e0187861. https://doi.org/10.1371/journal.pone.0187861.

Obaid M, Dünser A, Moltchanova E, Cummings D, Wagner J, Bartneck C. LEGO pictorial scales for assessing affective response. In: Abascal J, Barbosa S, Fetter M, Gross T, Palanque P, Winckler M, editors. Human-Computer Interaction – INTERACT, vol. 9296; 2015. p. 263–80. https://doi.org/10.1007/978-3-319-22701-6_19.

Occupational Therapy Australia (Internet). Code of ethics 2014. https://www.otaus.com.au/sitebuilder/about/knowledge/asset/files/76/codeofethics%282014%29.pdf. Accessed 10 Jan 2019.

Ören B, Zengin N, Yazıcı S, Akıncı AÇ. Attitudes, beliefs and comfort levels of midwifery students regarding sexual counselling in Turkey. Midwifery. 2018;56:152–7. https://doi.org/10.1016/j.midw.2017.10.014.

Osgood CE, Suci G, Tannenbaum P. The measurement of meaning. Urbana: University of Illinois Press; 1957.

Pannucci CJ, Wilkins EG. Identifying and avoiding bias in research. Plast Reconstr Surg. 2010;126(2):619–25. https://doi.org/10.1097/PRS.0b013e3181de24bc.

Patten SB, Remillard A, Phillips L, Modgill G, Szeto AC, Kassam A, et al. Effectiveness of contact-based education for reducing mental illness-related stigma in pharmacy students. BMC Med Educ. 2012;12(1):120. https://doi.org/10.1186/1472-6920-12-120.

Patterson C, Perlman D, Taylor EK, Moxham L, Brighton R, Rath J. Mental health nursing placement: a comparative study of non-traditional and traditional placement. Nurse Educ Pract. 2018;33:4–9. https://doi.org/10.1016/j.nepr.2018.08.010.

Peltan ID, Shiga T, Gordon JA, Currier PF. Simulation improves procedural protocol adherence during central venous catheter placement: a randomized controlled trial. Simul Healthc. 2015;10(5):270–6. https://doi.org/10.1097/SIH.0000000000000096.

Puri Singh A, Haywood C, Beach MC, Guidera M, Lanzkron S, Valenzuela-Araujo D, et al. Improving emergency providers' attitudes toward sickle cell patients in pain. J Pain Symptom Manag. 2015;51(3):628–32. https://doi.org/10.1016/j.jpainsymman.2015.11.004.

Reid N. Thoughts on attitude measurement. Res Sci Technol Educ. 2006;24(1):3–27. https://doi.org/10.1080/02635140500485332.

Reynolds KE, Magnan MA. Nursing attitudes and beliefs toward human sexuality collaborative research promoting evidence-based practice. Clin Nurse Spec. 2005;19(5):255–9. https://insights.ovid.com/pubmed?pmid=16179857

Roberts H, Noble J. Changing medical student perceptions of dementia. Neurology. 2015;85(8):739–41. https://doi.org/10.1212/WNL.0000000000001867.

Rosenberg MJ, Havland CI. Attitude organization and change: an analysis of consistency among attitude components. New York: Yale University Press; 1960.

Russell GJ. Itemized rating scales (Likert, semantic differential, and Stapel). In: Kamakura W, editor. Wiley international encyclopedia of marketing volume 2: marketing research. Hoboken: Wiley; 2011. https://doi.org/10.1002/9781444316568.wiem02011.

Sabin JA, Moore K, Noonan C, Lallemand O, Buchwald D. Clinicians' implicit and explicit attitudes about weight and race and treatment approaches to overweight for American Indian children. Child Obes. 2015a;11(4):456–65. https://doi.org/10.1089/chi.2014.0125.

Sabin JA, Riskind R, Nosek B. Health care providers' implicit and explicit attitudes toward lesbian and gay men. Am J Public Health. 2015b;105(9):1831–41. https://doi.org/10.2105/AJPH.2015.302631.

Schwarz N. Attitude measurement. In: Wright J, editor. International encyclopedia of the social & behavioral sciences. 2nd ed. Amsterdam: Elsevier; 2015. p. 178–82.

Sekoni AO, Gale NK, Manga-Atangana B, Bhadhuri A, Jolly K. The effects of educational curricula and training on LGBT-specific health issues for healthcare students and professionals: a mixed-method systematic review. J Int AIDS Soc. 2017;20(1):216–24. https://doi.org/10.7448/IAS.20.1.21624.

Sheals K, Tombor I, McNeill A, Shahab L. A mixed-method systematic review and meta-analysis of mental health professionals' attitudes toward smoking and smoking cessation among people with mental illnesses. Addiction. 2016;111(9):1536–53. https://doi.org/10.1111/add.13387.

Silverman D. Doing qualitative research: a practical handbook. London: Sage; 2010.

Sim I, Mackenzie L. Graduate perspectives of fieldwork placements in developing countries: contributions to occupational therapy practice. Aust Occup Ther J. 2016;63(4):244–56. https://doi.org/10.1111/1440-1630.12282.

Smith J, Noble H. Bias in research. Evid Based Nurs. 2014;17:100–1. https://doi.org/10.1136/eb-2014-101946.

Solomon MR. Attitudes and persuasive communications. In: Solomon MR, editor. Consumer behavior: buying, having and being; global edition. Boston: Pearson; 2017. p. 284–333.

Stephensen A, Adshead L, Higgs R. The teaching of professional attitudes within UK medical schools: reported difficulties and good practice. Med Educ. 2006;40:1072–80. https://doi.org/10.1111/j.1365-2929.2006.02607.x.

Streiner DL, Norman GR, Cairney J. Health measurement scales: a practical guide to their development and use. Oxford, UK: Oxford University Press; 2015.

Sullivan A, Mendonca R. Impact of a fieldwork experience on attitudes toward people with intellectual disabilities. Am J Occup Ther. 2017;71(6):7106230010p1–8. https://doi.org/10.5014/ajot.2017.025460.

Swift JA, Tischler V, Markham S, Gunning I, Glazebrook C, Beer C, et al. Are anti-stigma films a useful strategy for reducing weight bias among trainee healthcare professionals? Results of a pilot randomized control trial. Obes Facts. 2013;6(1):91–102. https://doi.org/10.1159/000348714.

Tobin GA, Begley CM. Methodological rigour within a qualitative framework. J Adv Nurs. 2004;48:388–96. https://doi.org/10.1111/j.1365-2648.2004.03270.x.

Tsingos-Lucas C, Bosnic-Anticevich S, Schneider CR, Smith L. The effect of reflective activities on reflective thinking ability in an undergraduate pharmacy curriculum. Am J Pharm Educ. 2016;80(4):65. https://doi.org/10.5688/ajpe80465.

van de Pol MHJ, Lagro J, Koopman EL, Olde Rikkert MGM, Fluit CRMG, Lagro-Janssen ALM. Lessons learned from narrative feedback of students on a geriatric training program. Gerontol Geriatr Educ. 2018;39(1):21–34. https://doi.org/10.1080/02701960.2015.1127810.

Walpola RL, Fois RA, Carter SR, Mclachlan AJ, Chen TF. Validation of a survey tool to assess the patient safety attitudes of pharmacy students. BMJ Open. 2015;5(9):e008442. https://doi.org/10.1136/bmjopen-2015-008442.

Wang R, Shi N, Bai J, Zheng Y, Zhao Y. Implementation and evaluation of an interprofessional simulation-based education program for undergraduate nursing students in operating room nursing education: a randomized controlled trial. BMC Med Educ. 2015;15(1):115. https://doi.org/10.1186/s12909-015-0400-8.

Wilcox C, Sigelman L, Cook E. Some like it hot: individual differences in responses to group feeling thermometers. Public Opin Q. 1989;53(2):246–57. https://doi.org/10.1086/269505.

World Health Organization (Internet). Multi-professional patient safety curriculum guide 2011. Cited Feb 2019. Available from: https://www.who.int/patientsafety/education/mp_curriculum_guide/en/.

Yamanaka T, Hirota Y, Noguchi-Watanabe M, Tamai A, Eto M, Iijima K, et al. Changes in attitude of medical students toward home care during a required 2-week home care clinical clerkship program. Geriatr Gerontol Int. 2018;18(4):655–6. https://doi.org/10.1111/ggi.13268.

Yang L, Yang Y, Huang C, Liang J, Lee F, Cheng H, et al. Simulation-based inter-professional education to improve attitudes towards collaborative practice: a prospective comparative pilot study in a Chinese medical centre. BMJ Open. 2017;7(11):e015105. https://doi.org/10.1136/bmjopen-2016-015105.

Yuker H, Block J. Research with the attitude toward disabled persons scales (ATDP): 1960–1985. Hempstead: Hofstra University Center for the Study of Attitudes Toward Persons with Disabilities; 1986.

Zhang YY, Zhang C, Han XR, Li W, Wang YL. Determinants of compassion satisfaction, compassion fatigue and burn out in nursing: a correlative meta-analysis. Medicine (Baltimore). 2018;97(26):e11086. https://doi.org/10.1097/MD.0000000000011086.

Zikmund WG, Babin BJ, Carr JC, Griffin M. Attitude measurement. In: Zikmund WG, Babin BJ, Carr JC, Griffin M, editors. Business research methods. 9th ed. Boston: Cengage Learning US; 2013. p. 310–32.