Critical thinking in Nursing: Introduction

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Purpose The purpose of this course is to define critical thinking and to explain intellectual standards to apply to thought, process for literature review, and logical fallacies to avoid in critical thinking.

Goals Upon completion of this course, the healthcare provider should be able to:

- Define critical thinking.
- Explain 9 elements involved in intellectual standards.
- Discuss questions related to intellectual standards.
- Discuss 6 steps to critical review of literature.
- List and give examples for at least 10 logical fallacies.

Introduction

At one time, it was medical dogma that stomach ulcers were caused by stress and that the best treatment was the Sippy diet. It's now clear that ulcers are often caused by bacteria, and the Sippy diet, which involved consuming milk and cream every hour and a mixture of sodium bicarbonate and calcium carbonate every half hour, led to malnutrition and heart disease (from the antacids) and did not heal the ulcers.

? If researchers had not questioned these medical assumptions (and many others), which were supported by research and accepted by the medical profession, medical care would not have progressed. Thus, one of the primary purposes of critical thinking in medical care is to always question, looking for better answers, reasons, and solutions.

What exactly is critical thinking? While there are many definitions, the basis is purposeful thinking and questioning with a goal in mind

and exercising judgment based on evidence, reason, and context. Critical thinking is an essential element in solving problems, which requires analysis, and making decisions, which involves choices.

Intellectual standards

Critical thinking is more complex than the everyday thoughts that fill our heads. Critical thinking implies an active application of analysis to thought processes. Paul and Elder (2001) identified a number of standards related to critical thinking and questions people may pose to themselves to aid in the critical thinking process. In the beginning, it may require effort to apply these standards to medical care and decisions, but over time they should become automatic.

Clarity Clarity is simply the ability to think clearly and logically and to express and understand an idea in more than one medium, such as in spoken and written words. For example, if new guidelines are being developed, the steps involved and the supporting evidence should be clearly outlined. In seeking clarity, one might ask for more information or examples.

Accuracy Accuracy is carrying out tasks and treatments correctly, obtaining evidence from appropriate sources, and evaluating the evidence appropriately. For example, hospital policy may require marking a surgical site in advance with permanent ink to ensure surgery is conducted on the proper site. In seeking accuracy, one might ask how to verify or test information.

Precision Precision is taking the time to follow steps exactly. If for example, the nurse fails to check insulin dose with a second nurse, an error may go undetected. Lack of precision often occurs as the result of healthcare personnel being rushed or attempting to take shortcuts in procedures. In seeking precision, one might ask for more specific details.

Relevance Achieving relevance means to sort through all the available information and data and determine which is relevant to the situation at hand. It's easy to get overwhelmed with information without a filter and to lose sight of the task at hand. For example, when assessing a patient with a gunshot wound, the fact that the patient is homeless is not relevant. This doesn't mean that his homeless condition is *irrelevant*—it may be very relevant to the police or to his general health—but it's simply not relevant to this assessment. In seeking relevance, one might ask how this information relates to the problem.

Depth Much of what people do is superficial, dealing with the problem at hand without looking deeper at the causes, but healthcare providers must always try to look at the complexity of a situation to determine root causes. For example, if an adolescent is repeatedly hospitalized for failing to take asthma medications, stabilizing the teen and sending her home without trying to determine the underlying reason for her failure to take medications does little to solve the problem. In seeking depth, one might ask what factors are involved in this problem and what is the best way to seek solutions.

Breadth Situations may be very complicated in medical care, so one should look at the breadth of a situation—from numerous perspectives—rather than looking from one perspective only. For example, a person dying of cancer may want a do-not-resuscitate order while the spouse or children may be adamantly opposed.

While an adult patient has the right to make this decision, family dynamics usually require that the feelings of other members be considered. The healthcare provider may be in a position to provide support and help people arrive at decisions. In seeking breadth, one might ask if other perspectives should be considered or alternative actions.

Logic Logic is simply the application of reason and following of logical steps. For example, the nursing process is followed in a logical progression from assessment, to diagnosing the problem, to planning an intervention, to implementing the plan, and finally to evaluating the results. Conclusions are arrived at by review of evidence. In seeking logic, one might ask if something makes sense or seems logical.

Significance Some information or actions are more critical or significant than others. The healthcare provider must be able to exercise reasonable judgment about the significance of information. For example, if a patient receiving a transfusion suddenly shows signs of anaphylaxis, stopping the transfusion immediately is more significant than reporting the reaction to the physician. Issues related to significance are very common in nursing. In seeking significance, one might ask what the most important problem or central issue is.

Fairness Fairness is being open to new ideas and willing to consider new and/or different approaches. Many of the problems in medicine derive from an unwillingness to make changes. People become familiar with procedures or processes and don't want to learn new ways of doing things, even if they are better. For example, a switch to computerized charting would decrease the incidence of medicine errors but would require that the healthcare personnel learn to use the new system and learn new ways to chart information.

While this change would impose a burden on the staff, applying the principle of fairness meant that the benefits to the patients outweighed the inconvenience to the staff. In seeking fairness, one might ask if selfishness or personal views are interfering with fairness to others.

Critical review of literature

Problem solving, decision-making, and development of guidelines often begin with a review of the literature. An important fact to remember in today's world is that just because something is written, or even believed by masses of people, it doesn't mean it's true. Aside from making slanderous statements, anyone is pretty much free to say or write anything.

People in the healthcare field must read critically, using care to evaluate the evidence while keeping an open mind to other possibilities. In 1998, the *Lancet,* a respected medical journal, published a paper by Dr. Andrew Wakefield in which he purported to show a link between vaccinations in children and autism.

In January 2010, the *Lancet* issued a formal retraction, stating that some elements of the research were incorrect and that the conclusions reached by Dr. Wakefield were false. Despite numerous studies showing no link between vaccinations and autism, many parents still refuse to vaccinate their children. The damage was done.

Consider the source The first step in critical reading is to consider the source of the material. Juried medical journals are always a more valid source than the popular press. While this is not a guarantee that the information is correct, as evidenced by the case of the *Lancet* and Dr. Wakefield, having the material reviewed by a number of different people helps to

ensure that most journal articles are based on solid research and that the reasoning is sound.

If the material is in book form, consider the publisher. Does this publishing house publish other medical books? If it does not, then the publisher may be less rigorous about details, such as validity. Is the book intended for healthcare personnel or the general public? Books written for the general public are often less detailed and provide less useful information than those written for the medical field.

Review the author's credentials

Who is the author or authors? A reporter? A nurse? Doctor? Researcher? One should always review the author's credentials to determine if the person is an expert in the field of study. Just because a person writes "doctor" before his/her name, it doesn't mean that person is a medical doctor or is an expert in the field about which the person is writing.

One way to review credentials is to look for other work by the same author and to search for biographical information. Googling the author's name is a simple method of doing this. If a book is a compilation of articles by various authors with an editor, then the editor and the author(s) of the particular article of interest should be reviewed.

Determine the central thesis

The thesis or central claim of research should be clearly stated in the introduction. One way to quickly evaluate an article or book is to read the introduction and the conclusion before the body of text. The conclusion usually provides a summary of the thesis and the main supporting points. This is also a quick and efficient way to determine whether the material is worth reading for the purpose of study or should be eliminated.

Examine the organization and methodology

The methodology used to research or reach conclusions should be clearly outlined. If the article/book is based on a particular theory, this should also be stated. The organization of the article itself should also be reviewed to

determine if it corresponds with usual practice. Does it have a clear introduction? Is it organized in a logical manner? Is there a concluding summary? Is the language and terminology appropriate for the intended reader?

Review evidence Evidence is critical. The evidence provided should support the main points of the article, but evidence can be misleading. For example, an author may state that a study showed that 60% of those in the group benefitted from a particular treatment. However, if there were only 10 people in the group, this has little validity. Additionally, in the world of statistics, percentages are the weakest link. Hard data in numbers should be presented.

A minimum sample size for research is usually considered 30 participants, but that number alone is not sufficient. And, that is not to say that all small studies are invalid, simply that they need corroboration. Generally speaking, the larger the sample size, the more valid the results. A meta-analysis of multiple studies is usually more valid than a single study. A single study with a small group can easily be skewed by bias and selection.

Research should clearly state the number of participants, the type of study, the ages, and the genders because findings that apply to males may not apply to females, and findings that apply to children may not apply to adults, and *vice versa*. Additionally, any variables, such as environmental concerns, should be identified. In many cases, there may be a limited number of studies available regarding certain practices.

The evidence should also be reviewed carefully for logical fallacies, such as overgeneralizations or information out of context. Does the author provide differing points of view or reference other ideas? Are opinions stated as fact? Are there obvious omissions?

Evaluate The overall article should be evaluated to determine if the content seems credible and useful. During the evaluation, all other steps in the critical review of the literature should be considered in determining if the article is sufficiently valid.

Logical fallacies

Logical fallacies are defects in presenting an argument. All research should be reviewed for evidence of fallacies, but people also must use

care not to use or fall prey to fallacies in interactions with others. People use logical fallacies because they are simplistic (it's so much easier to use fallacious reasoning than to provide actual evidence) and they often work.

Politicians, for example, often use an appeal to fear to gain support. In medicine, people often respond to fear of sickness or death by investing belief in nonsense cures.

Common logical fallacies	
Hasty generalization	Making assumptions about a group based on a sample: • An Islamic woman stated she didn't want a male nurse to examine her during labor. The team leader reported to administration that women don't want male nurses in OB.
Overgeneralization	Extending conclusions beyond logical limits: • The administrator said I needed to clarify the goals of this project, so there's no point in continuing with it. • Two of Dr. Smith's surgical patients developed infections, so there's something wrong with his technique.
Missing the point	Suggesting that the premise of an argument leads to a conclusion different from the stated conclusion: • The evidence shows that the staff members who use presurgical checklists have patients with fewer surgical site infections, so staff members who have not used checklists should be replaced.
Post hoc	Assuming that because one thing precedes another, the first thing is the cause of the second without supporting evidence: • Since S. Jones took over as head nurse, 2 people have quit. People are quitting because of S. Jones.
Slippery slope	Assuming that one action will lead to a chain of events ending in disaster, without supporting evidence: • If the hospital provides free care for foreign war victims, the hospital will be overwhelmed by war victims wanting

	care and will become bankrupt.
Weak analogy	Comparing two unlike things in order to make an argument: • It's not legal to euthanize old people, so abortion should not be legal.
Appeal to authority	Assuming something is true or correct because it is supported by a person in authority: • There is no need to change procedures. The Director of Nursing said the current procedure is adequate.
Ad populum	Making an appeal based on popular sentiment rather than evidence or reason: • Most people think that drinking is immoral, so drinking should be against the law.
Ad hominen	Attacking the person/group instead of the argument: • Dr. Brown has an inflated notion of his own ideas. • All drug companies are corrupt.
Appeal to pity	Playing on people's feelings of pity or sympathy to make an argument: • Sally needs a promotion because her husband is sick, and she has financial difficulties.
Appeal to fear	Playing on people's fears to make an argument: • If health care benefits are extended to everyone, the system will be overwhelmed and those with insurance now will not be able to get care.
Appeal to ignorance	Arguing that a belief is true because evidence is not clear that it isn't true: • Disease is punishment for sins.
Appeal to tradition	Assuming that because something has "always" been done a certain way, that that way is best: • Mastectomies have a good cure rate for breast cancer, so there's no reason to switch to lumpectomies.
Red herring	Deviating from the topic to distract others with another argument that the speaker/writer feels is easier to support: • During a discussion about a presurgical

	checklist to decrease surgical infections, a group member argues that staffing is insufficient and needs to be addressed before any other changes.
False dichotomy	Suggesting there are only two possibilities but one is not viable, leaving only one possibility: • We need to either remodel this wing or tear it down, but there are so many safety issues that people may get injured, so we should tear it down.

One thing to remember about logical fallacies is that the conclusion may be right, but the process is wrong. For example, in reviewing the example of *post hoc* (see above), it may be true that people were quitting because of S. Jones, but it's not logical to make that statement without supporting evidence, which may include:

- Staff surveys.
- Post-employment interviews.
- Observations.
- Staff meetings/discussions.

A responsible person must always ask, "What supporting evidence is there?"

Conclusion

An important element in critical thinking is to examine biases, in oneself and others. Everyone has biases to some degree that color the way the person views the world and others. For example, if a healthcare provider believes that drug addiction and alcoholism are personal choices that should preclude people from being recipients of organ transplants but works on a transplant unit in which many patients have a history of drug addiction or alcoholism, this healthcare provider must understand that this personal bias cannot affect patient care. This is an application of fairness.

Biases, especially if the person is unaware of them, may affect the way a healthcare provider makes decisions and treats patients and may interfere with critical thinking.

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