

WHY DO I NEED THEORY

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In our first letter we discussed the need for developing nursing knowledge through research in nursing. Let us now examine the means by which one further develops and adds to our existing knowledge about health and health care. In a later chapter we will go into the details of developing or isolating health-related principles.

Knowledge building

One of the oldest and most-established means of solving problems is the transmission of knowledge through **authority**. We use this method under certain circumstances, such as, when we accept the church as the authority for religious knowledge. We often refer to other authorities as well, such as, the clergy, the college professor, the economist, the banker, the physician.

"What about an expert in nutrition—is she an authentic source of knowledge?"

Yes, a specialist having in-depth knowledge in any field of practice is considered as an authority.

"Sometimes, one who has had a series of rich personal experiences becomes an expert in his/her own right in a particular field."

That is right. Often such knowledge is of great value in learning cultural habits and customs of people living in tribal or remote areas. But one should also guard against making what we call a "subjective estimation". That is, one may establish belief on insufficient evidence or fail to observe significant factors. Or, one may omit evidence that does not agree with his/her opinion.

Knowledge also develops through **deductive and inductive reasoning**. You may begin your questioning by observing particular instances, say, patterns of relating to infants by mothers and grandmothers. And when you have made the particular observation several times, you begin to establish general conclusions about the whole class to which these particular instances belong. This is called inductive reasoning.

"Can you illustrate this with another example?"

Well let us say that you observe that in several instances children of working mothers show comparatively slower social development than the children of non-working mothers. This may lead you to say that there is a relationship between maternal deprivation and social development of children. This is also an example of inductive reasoning.

Then "what is deductive reasoning?"

In deductive reasoning, you go from the general to the specific. If an investigator arrives at general conclusions through induction, he may use them for deductive inferences. This is a scientific method of acquiring knowledge as there is a quality of self-correction based on objective evidence. For example, we have a general proposition that the contamination of a drinking water source by *Entamoeba histolytica* will bring dysentery to those drinking the water. From this statement, we can reduce the particular proposition that the people of Gurnka Village risk dysentery because their water has become infected with this organism.

"What is objective evidence?"

Evidence is objective when it is observable and measurable, e.g., one can see and measure a rise in pulse, blood pressure, and change of facial expression, but one cannot measure "anger" or "worry". If you need objective evidence of anger, then you need to define the concept in observable and measurable terms. This is called an **operational definition**.

Facts, Principles, Concepts and Theories

The body of knowledge consisting of facts, principles, concepts and theories depends on physical, biological, social and medical sciences.

"What's the difference between facts and concepts?"

Facts are observable and measurable events, e.g. name, sex, age, number of children, measure of body temperature, and fracture of a limb seen on X-ray—all are facts about a person or client. A **concept** is a generalized idea of some group of objects or several facts perceived in a meaningful way by the users.

"Is a concept the same as an impression?"

No. A concept is not an impression but involves higher mental ability such as interpreting language, finding relationship etc. A concept includes both a **concrete** form, such as the concept of "kidney", or it may be ideational, such as the "concept of liberty". Let us examine the following example: A **10-year old boy** has a large **wound** on his body. He develops a high temperature—**105°F (40°C)**, and a rapid **pulse and respiratory rates—120/28**. His painful wound shows a **pus** discharge. The health worker thinks of "infection" as he/she studies the relationship between vital signs and the abnormal discharge of wound. He/she gives cold drinks, applies a cold head compress to reduce temperatures and sends the pus sample to the laboratory for a bacteriological test. The words underlined are facts—that is, the events that are observable; the word "infection" is a concept as several events occurring together form the concept "infection". The application of cold compresses and the giving of cold drinks is related to the loss of body temperature through conduction which is a **principle** of heat transfer.

"Do you mean that the principle is a general rule that can be applied to different situations?"

Right, there are several therapeutic procedures of cold, local and general applications where the principles of heat transfer can be explained. Thus, principles are derived from the results of scientific investigations that describe a particular phenomenon.

"What is a theory then? Isn't a theory the same thing as a law?"

In some ways, yes—both theory and laws describe relationships between facts that may be used to explain phenomena or a series of events on the basis of observed facts; but a theory lacks absolute or direct proof whereas a law states that when conditions are the same, the particular phenomenon would always occur.

"Can you explain this with an example?"

In the previous example, the theory explains the relationship of fever to the reaction of the body against bacteria and also it explains the reason for selection of cold therapy to reduce the temperature.

A theory consists partly of events that are of known dimensions (fact, law), and events that are of assumed dimensions (e.g. assumptions, hypotheses, propositions). It may also include events of unknown dimensions for which adequate explanations are not available.¹ Research aims at shifting the events from unknown to assumed dimensions, and assumed dimensions to the known dimensions. Kerlinger² explains

the function of theory as description, prediction and explanation: e.g., it describes what the variables are and how they are related; it predicts relationships between variables, suggests new things, or it attempts to explain sets of events, i.e. in analyzing the occurrence of events.

"So many forms to know. It is confusing."

Well, it is a complex idea and it takes hard thinking to conceptualize relationships that are not so concrete or right in front of you! Let us look into the following diagram of spread and control of gastrointestinal infections. This model is a diagram. It shows in picture form, how the ideas relate to each other. If you did not have a picture available you could write down your ideas and describe the model and your theoretical framework.

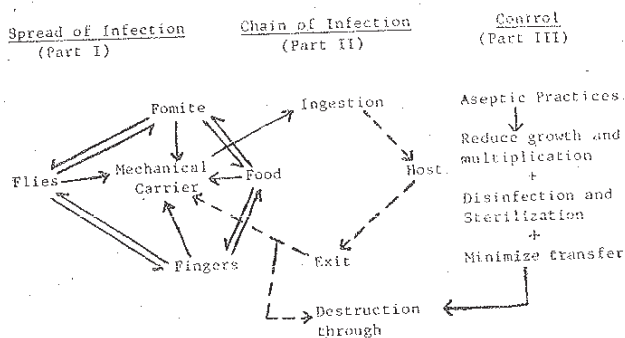


Figure 1: Conceptual Model on Spread and Control of Gastro-intestinal Infection.

This picture describes a model of the spread of infection (Part I), the infection in the human being (Part II), and the methods of controlling or preventing the infection (Part III). The model also shows relationships among the variables, i.e. mechanical carriers with infection and infection with control. If we set up a research study in relation to this model we would also be able to predict occurrence of infection or control of infection on the findings related to the chain of infection.

"That's better—it is getting clearer. It means that the model represents some theoretical concepts and this concept is represented as a form of reality using symbols and signs?"

Right. And a theoretical framework is intended to identify the related theory and law which remain behind the model structure.

For your interest we have included another model in Figure 2.

(Continued on page 266)