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RESEARCH DESIGNS USED IN PHARMACY PRACTICE

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ABSTRACT

The flexibility to select the best methodology is provided by the wide variety of quantitative approaches. However, It is essential to understand that every design has its own set of limitation, and this is vital to consider when choosing a research method in the pharmacy practice research. By using both quantitative and qualitative techniques, this study showed the importance of pharmacist's role in the current healthcare system. By conducting inclusive, collaborative, partnership-based, and co-produced research, qualitative research can also be utilised to "democratise" research methodologies.In pharmacy research, a variety of qualitative research techniques may be applied.The ultimate purpose of these articles is to assist readers become more informed about crucial pharmaceutical issues in research designs used in pharmacy practice.

Keywords: Qualitative methods, Pharmacy practice, Research

INTRODUCTION

Research refers to a search for knowledge. A methodical search for relevant knowledge on a particular subject using science. In actuality, research is a form of artistic scientific inquiry. The term "Research Problem" refers to a difficulty or need that a researcher experiences in either a theoretical or practical context and wishes to resolve. Researchers encounter problems / needs in either theoretical or practical situations, and they seek a solution to them for identification / Selection of the Problem. Formulation of the Problem. Research personnel. Various classifications for research designs and methods used in pharmacy practice have been used in the literature. The following are some of the approaches for the classification of research designs: Retrospective design-A retrospective study design observes what has happened in the past. It begins and ends in the present. This design involves a major limitation as it looks to collect information about events that occurred in the past. An example of this design is retrospective case-control study.

Prospective design

A prospective study design begins in the present and progresses forward, collecting data from subjects whose outcomes lie in the future. An example of this design is prospective cohort study. Descriptive design-A descriptive study describes a population/sample in terms of distribution of the variables, and frequency of outcomes of interest.

Descriptive studies do not include a comparison group, in contrast to analytical studies that do. Case reports, case series reports, cross-sectional studies, and other descriptive studies surveillance studies, and ecological studies. Analytical design-An analytical study identifies risk factors, associated factors, mediating factors, etc.

Case-control and cohort studies are types of observational studies. Experimental design-In experimental design (also known as interventional design), the investigator performs an intervention and evaluates cause and effect relationships.

Quasi-experimental design-The quasi-experimental design is very similar to the true experimental design described above and it involves an intervention.

The design has been employed when randomization is inappropriate or impossible, especially when implementing complex interventions. Observational design-It involves only observation of natural phenomena and does not involve investigator intervention. Typically, this study design investigates associations and not causation. Examples

include cohort study and case-control study.

Quantitative design

This is based on measurement of quantity and it is applicable to phenomenon that can be quantified (i.e., expressed in terms of numbers). Mixed method designs-Mixed method design brings together qualitative and quantitative methodologies within a single study to answer or understand a research problem Case-control studies-In this design, patients are identified and control patients are sampled at random from the original cohort that gives rise to the cases The distribution of exposure to certain risk factors between the cases and the controls is then explored, and an odds ratio is calculated.

Cohort studies

This can be described as a study in which a group of exposed subjects and a group of unexposed subjects are complied with over time and the incidence of the target condition or result in the exposed group is compared with that in the unexposed group. Case-crossover studies-The case-crossover may be considered comparable to a crossover randomized controlled trial.

Pattern of exposure among the cases is compared between event time and control time. The between-patient confounding that occurs in a classic case-control study is circumvented in this design. The function of antibiotic prophylaxis and the link between invasive dental work and oral streptococcal infection endocarditic, using a nationwide population-based cohort and a

Case-crossover study design.

Case-time controls a study

The case-crossover is extended in this design. Design, but includes a control group. A group of researchers assessed medication-related hospitalization. And unplanned hospitalizations. Nested case-control studies-In this design, a cohort of people is monitored over specific time periods until a specific result is attained, and the analysis is carried out as a case-control study in which cases are matched to only a sample of control subjects. Cross-sectional studies: In this design, the researcher simultaneously assesses the study participants' exposures and the outcome of interest. It offers a momentary snapshot of the state of affairs.

A hypothesis is an assumption that can be tested to determine whether it is true or false. A problem is a complex query that cannot be answered directly. Once a problem has been transformed into a hypothesis, it can be scientifically investigated.

Features of the hypothesis 1. Conceptual Clarity - It needs to be precise and clear. 2. Specificity - It should be narrowly focused and specific. 3. Consistency - It ought to be in line with the study's goals. 4. Testability - It must be able to withstand testing. 5. Expectancy - The expected relationships between the variables should be stated. 6. Simplicity - The information should be presented in as few words as possible. 7. Objectivity - It shouldn't contain moral preaching, value judgments, or relative terms.

8.It should be consistent with a sizable body of established or known facts or existing theory in terms of theoretical relevance. 9. Techniques should be accessible; statistical techniques should be available to test the proposed hypothesis. • Conversations with coworkers and subject matter experts about the issue, its causes, and the search's goals. • Analyzing data and records to look for any unusual or trending patterns. • An analysis of related studies. • Personal observation and exploratory research. • Logical inference from the accepted theory. • The persistence of research. • Feelings and firsthand knowledge.

Categories of hypotheses 1. Descriptive Hypothesis: These hypotheses describe a variable's characteristics, such as its size, form, or distribution. The variable could be a thing, a person, a group, a circumstance, or an event. 2. Relational Hypothesis (Explanatory Hypothesis): The following premises describe the

It is a 'no difference', 'no relationship' hypothesis. ie., It states that, no difference exists between the parameter and statistic being compared to or no relationship exists between the variables being compared. It is usually represented as HO or H0. 4.

Alternate Hypothesis: It is the hypothesis that describes the researcher's prediction that, there exist a relationship between the two variables or it is the opposite of null hypothesis. It is represented as HA or H1. Functions or role of hypothesis:

It gives the investigation a clear focus and gives the study direction. It establishes the data requirements. 3. It identifies the data sources. 4. It suggests which kind of research is probably more suitable. 5. It determines which analytical technique is best. 6. It advances theoretical development.

Experimental Research Methods In experimental research method, the researcher establish different situations or treatments as variables and studies their effects on the participants. Researcher can control and manipulate variables and can study the cause and effect relation-ship for each variable.

These are also known as intervention-based studies as they involve more than just observing the phenomenon. The general requirements for the experimental research studies are as follows:

• A randomly selected or a randomly assigned group of participants to be a part of a comparison group (which can either be an experimental group or a control group) except

Quasi-experimental design where the randomization of sample is not possible.

• An independent variable (a treatment, a cause, or an experiment variable) applied to the experimental group. • A dependent variable commonly known as criterion variable (also known as posttest or effect variable) is identically measured in all groups in a study. Random selection of the study population and random assignment of these individuals to both experimental and control group are mandatory requirements for an experimental research method.

In the end, this aids in maintaining the comparability of the two groups and aids in the management of variables that might affect the study's findings. The following four categories can be used to further categorize experimental research methods: 1. The preliminary research technique 2. The quasi-experimental approach to research 3. Authentic experimental methodology 4. The one-subject research design the two main groups of experimental techniques are single variable design and factorial design. While factorial designs consist of two or more variables and at least one independent variable is manipulated, single variable designs

only involve the manipulation of one independent variable. Method of Pre-Experimental Research The technique, known as a one-shot case study, is employed to gather some initial information about a issue.

A single population group is included in the preexperimental research method, and this population group receives treatment and is post tested. This research approach does not control unrelated or auxiliary variables, so it is not the method of choice for a study. Research. Another preexperimental research technique is posttest only, meaning that no pretest is conducted prior to treatment exposure.

Another method is pretest-posttest design, which is similar to the single group posttest design, but prior to the exposure of treatment, a pretest is done Pretest and posttest scores are evaluated to see if there is any change in the response. In this case, the researcher finds out the difference in the response and its possible explanation.

Limitations Since the method has no control over unrelated variables; researchers are unable to draw definite conclusions about the cause and effect relationships between variables. Method of Quasi-Experimental Research although quasi-experimental research methods are thought to be the closest thing to actual experiments, because the participants are not chosen at random, the ability to control unrelated factors is ultimately compromised.

In contrast, quasi-experimental research, like other experimental research methods, looks for a causal link between an intervention and its results, and in the end, they offer more support for exploratory trials involving reliable research systems. As a result, in pharmacy practice, the quasi-experimental method aids in the evaluation of an intervention over time. When it is not possible to randomly assign participants to a treatment or intervention group for logistical or ethical reasons, quasi-experimental research is the method of choice. In situations where it is impossible to assign participants at random, the design is very helpful.

The design, however, does not randomly assign participants to treatment groups. In the end, this raises the possibility of study bias. Authentic experimental research methodology The technique involves assigning participants at random to various treatment scenarios. This type of study design is called a randomized controlled trial because participants are randomly assigned to the experimental and control groups. Such a research design is frequently used in studies on pharmacy practice because it makes it easier to assess the effectiveness of new health care services and interventions. Research in Pharmacy Practice Using Quantitative Techniques The control group receives no active treatment, or occasionally, a standard value that has no impact on the independent variable's value is used. But, in an experimental group or a treatment group, participants receive a treatment or an intervention that can alter the value of an independent variable resulting in an impact or an effect. The involvement of at least one comparison group is an important feature in this study design. In a research method, where the participants are not aware of the identity of treatment or intervention is known as single blind controlled trial. In a double blind controlled trial, both researchers and participants have no information regarding who is receiving a treatment or an intervention. The randomization of participants helps to control the risk factors, which may emerge as a threat to the validity of data.

However, true experimental methods require stringent requirements to not risk the validity of the data. Single-Subject Research Method Most of the experimental studies require group of participants, whereas in single-subject research design, the studies can be carried out for every individual case. In primary care research-based studies, single-subject research designs are frequently used to examine the course, impact, or outcomes of a treatment or intervention on a single patient

In the single-subject case studies, the outcome from dependent variables is measured and recorded for individual participants during different times and at different levels of intervention. The performance of a subject is evaluated both in a notreatment and treatment phase.

The no treatment phase can be regarded as phase A, while the treatment phase can be marked as phase B. There are various types of single-subject design, one of which is called the A-B design. In single-subject research, initial measurement of variables (A) is taken, and then a treatment (B) is given to the subject and a change is observed to see the treatment effect.

This design is comprised of baseline measurements (first phase) followed by treatment (second phase) and finally the removal or withdrawal of treatment (third phase).

However, it is required that the researcher should accurately measure the behavior change before and after applying the treatment. This can be repeated many times. On the removal of the treatment, if condition reverses, it means that the treatment has some positive effect on the subject.

Validation of a Research Method Validity of a research method refers to the value, truth, and originality one can place on the study findings. Validity of research the extent to which one can say that the research outcomes are accurate and generalizable. Factors affecting External and internal consistency should be controlled; otherwise, it may jeopardize.

The reliability of results and the conclusion of the study. Accurate data from the right subjects must be gathered in the proper circumstances in order to assess the external validity of quantitative research methods. The specifications of a target population must be clearly described, and the selected subjects must represent the population under study.

The instruments used (equipment, questionnaires, or interviews that measure physiological or psychosocial variables) should be standardized. The same should be piloted before using newly developed instruments in a research study.

CONCLUSION

It encourages research that is concerned with ensuring that participants who experience marginalization influence research, help identify what is important, and specify how the community might benefit from their involvement. Select the appropriate statistical method to go along with the research methodology. Recognize when to use which statistical technique. Use statistics to assess, infer, and comprehend a good, a situation, a service, or a course of treatment. Interpret statistical literature, scientific papers, and assertions supported by statistics. Select a methodology and research design after doing your research. Put this knowledge to use by carrying out reliable psychology research.

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