



Application of Cross-National Comparative Research Design in Medical and Nursing Education

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Abstract

It is impossible to think without making comparisons. In the absence of comparison, all scientific inquiry and investigation is meaningless. Comparison has a significant history in the study of human science, history, and culture. Comparative study in the subject of social theory may be seen since ancient Greek, and this unbroken history was only strengthened as time has elapsed. Comparison research is a process of determining and quantifying correlations between two or more variables by studying various groups that are subjected to various treatments, either by decision or by circumstances. A comparative analysis compares two or more similar groups, individuals, or conditions to arrive at a conclusion. Due to the result of ongoing processes such as the massive expansion in telecommunications, technical breakthroughs, and the inherent amplification of globalization trends, comparative research, particularly cross-national comparison, has received much interest lately. As a result, instances of comparative techniques may be found throughout the modern social sciences, health sciences, and humanities. Researchers have compared cases to each other, use statistical techniques to establish quantitative comparisons, compare cases to theoretically produce results, and compare case values on important factors to actual rates to examine co-variation.

Keywords

- ▶ design
- ▶ research design
- ▶ comparative study
- ▶ cross-national comparison
- ▶ research framework

Introduction

It is impossible to think without comparing. All scientific ideas and investigation are rendered meaningless in the absence of comparison. Comparative analysis has a lengthy history in scientific knowledge, history, and culture. Comparative study in the field of social theory may be dated back to Greek civilization, and this unbroken history was only strengthened throughout time.¹

As a result of major processes such as the massive expansion in communications, technological advances, and the immanent amplification of globalization trends, comparative study, especially cross-national analysis, has received a

lot of attention in our day. As a result, instances of comparative techniques may be found throughout the modern social sciences and humanities. To analyze complex interactions, researchers have compared examples to one another, establish quantitative comparisons using statistical approaches, compare cases to theoretically produce pure cases, and compare case values on important variables to average values.²

Comparing examples to substantive and theoretical criteria provides a foundation for understanding and analyzing instances and generating factual regularity assessments. In empirical social science as it is today practiced in this broad

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sense, comparing is crucial. Social research is inherently comparative rather than comparing examples directly, investigators examine the relative effects of variables across instances. Research analysis is an attitude or perspective rather than a specific research method.^{2,3.}

Causality is a fundamental issue in comparative research. Causes of discrepancies and similarities between two assertions or groups of persons are investigated by researchers that perform causality comparative studies. Researchers may make mistakes in pinpointing the precise cause of the problem in comparison studies due to the lack of a uniform scale for applying both scenarios.⁴ In contrast, comparison is typically employed as a broader analytical framework rather than a research methodology. Also, it is so firmly established in most research procedures that distinguishing it as a separate method is difficult. As a result, Stausberg's paper on comparison included sections on epistemology, feminist methodologies, research design, and research methodology under "research methods" rather than "methods" in the Handbook.⁵

Comparative research is also a broad word that refers to the use of qualitative and quantitative research tools to compare any subject across two environments. When the term "comparative research" is combined with the term "cross-national," the meaning becomes more explicit. According to Hantrais and Mangen, cross-national comparative research is conducted when countries are compared in terms of the same ideas to draw generalizations or get a better knowledge of the phenomena under investigation.⁶

Cross-national comparative research is focused with studying and explaining social phenomena across countries. It entails comparing how a certain social institution, trend, or phenomena develops in different socio-cultural situations utilizing the same study methodology in two or more nations. This method requires empirical data for multiple countries and levels, as well as a methodology capable of dealing with multilayered data.

Cross-National Comparative Research: Historical Overview

Bollen et al were interested in macro-comparative research, hence they included studies that "involved global, aggregate, or individual level structure or process" in their comparison studies. The topic of this special edition is relatively narrow. As previously said, it investigates how settings influence individual and collective actors' behaviors and attitudes at lower levels. Individual actors may include citizens or employees, while collective actors may include political parties or enterprises. Many social science theories' methodological individualism, or the belief that social phenomena can be traced back to the motivations and actions of individual agents acting on their own or representing larger collectivities such as families, clans, or organizations, is at the root of the interest in behavior and attitudes at lower levels. After determining how the context influences behaviors and attitudes at lower levels (the macro-micro link), the next step should be to demonstrate

how lower-level behaviors and attitudes influence upper-level (meso-, macro-) outcomes.⁷

The Individualistic Turn: This is studied on individual-(micro-)level relationships, such as whether working-class people are more liberal on economic problems but illiberal on civil freedoms and racial issues, and whether it is true in various countries.⁷

Characteristics of comparative study:

Just like the experimental design, the comparative study must have the following characteristics:

1. At least two known and previously studied variables.
 - An independent variable that is believed to be causative.
 - A dependent variable that is believed to be the effect.
2. The only variable that is measured is the constant variable.
3. The layout is based on the theories.
4. The design uses a predictive hypothesis rather than a simple statement of relationship.⁸

Unlike the experimental design, the comparative study has the following characteristics:

1. The independent variable is observed as it occurs naturally in the population.
2. The independent variable cannot be manipulated in reality or ethically.
3. The design cannot test theory directly.
4. The design is based on a research question such as, "What are the differences between groups when the groups represent different positions of the independent variable?"
5. The design attempts to represent the population through probability sampling.

Example: Study of smokers versus non-smokers (the independent variable) on their length of life (dependent variable) based on the predictive hypothesis that non-smokers would live longer than smokers. The study would have been designed on the basis of findings from a correlational survey answering the question, "What are the relationship between smoking and state of health"⁹

Variations in Comparative Design

The comparative design has more than one form which is as follows (→ Fig. 1):

1. Retrospective: Whenever the samples are drawn based on the dependent variable in the present (e.g., lung cancer), accompanied by an investigation for a hypothesized cause in the past, the study is retrospective (e.g., cigarette smoking). Researchers start by looking for differences in antecedent behaviors or situations, such as smoking behavior, between those who have lung cancer and those who do not.
2. Time series: It is research in which data are collected over a significant period of time, with several data gathering

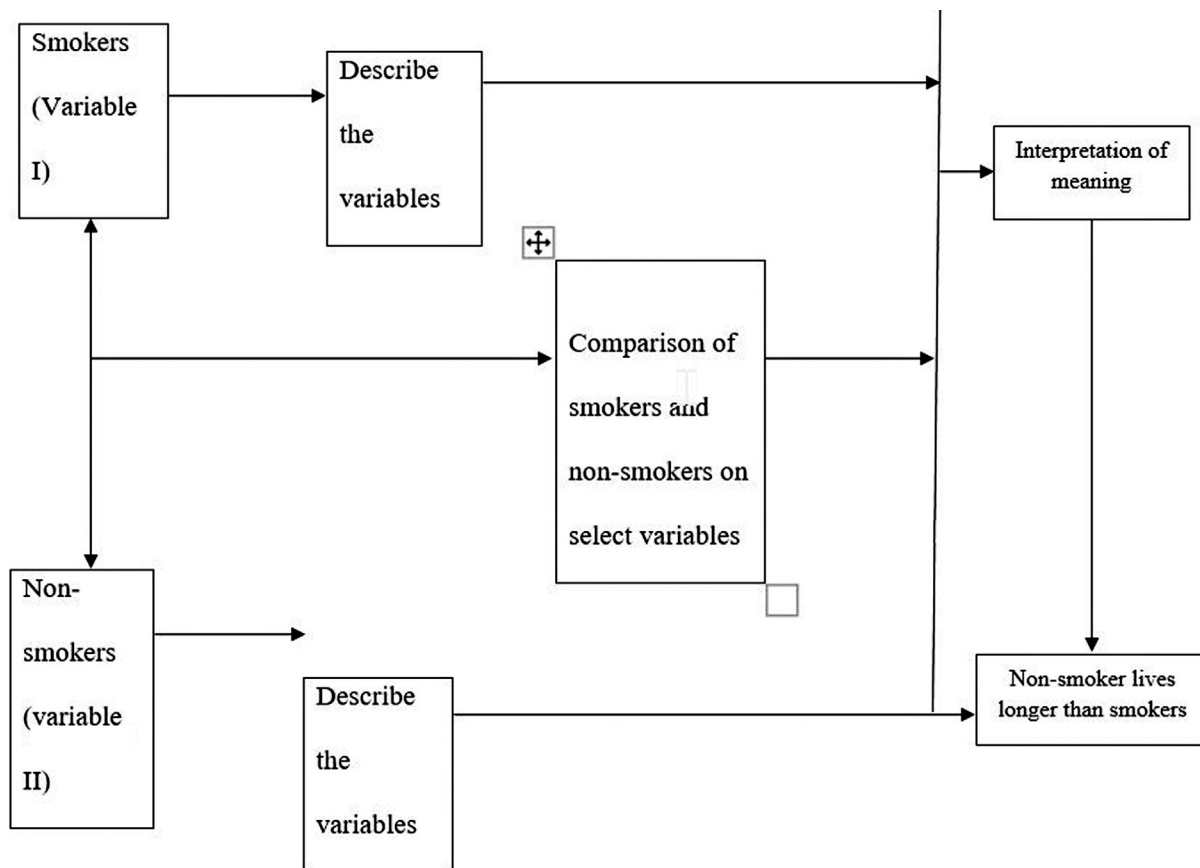


Fig. 1 Comparative descriptive design.^{8,9}

locations both before and after an intervention. The impact or the predictor variables is reported in a medical chart (e.g., staphylococcus infection) as happening on a given day during the participant's admission in the research of the incidence of staphylococcal infection among admitted patients in a hospital. Before and after the commencement of the epidemic, numerous observations have been made.

3. Multiple treatments: In study of multiple treatments, the existing nursing management systems in the same or different hospitals are compared with one or more patient outcomes.
4. Descriptive comparative: Descriptive comparative is used to determine outcomes and compare them in two or more groups that persist in the environment in a situation. To investigate differences between or among groups, descriptive and analytical techniques can be performed. Usually, the analysis results are not extrapolated to a population.
5. Causal comparative: Causal comparative attempts to identify cause-effect relationships among two or more groups and one independent variable. It involves making comparisons.⁷⁻⁹

Common Sampling Methods Used in Comparative Study

In the comparative design, control over the data are accomplished through the sample collection methods, the

conditions under which variables are observed and measured and by the statistical techniques used to analyze the data. There are several sampling issues in comparative designs. The most desirable ones are as follows:

1. Stratified random sampling: Stratified random sampling is a sampling technique in which the entire world is partitioned into subgroups (strata) with as much homogeneity as possible within each stratum and as much differentiation as feasible across them. After that, a sample was obtained by picking a specific number of units from each stratum. Example: In a study of hypertension prevalence among men and women, the population is divided into two groups according to gender and draw an equal number of subjects from each.
2. Quota or non-probability stratified sampling: The quota sample includes accessible respondents, but still it goes above and above to guarantee that representations from many aspects of the community are included. It can ensure that these elements occur in the sampling in same proportions as they do in the population. Example: An interviewer, instead of receiving a list of names and addresses to be interviewed, receives the number of interviews which he has to conduct who satisfy certain criteria such as age, sex, and income. Thus, he may be asked to interview 20 businessmen over 40 years of age in a particular area. The interviewer can then select at his

own discretion any 20 businessmen of that area who are above 40 years of age.

3. Convenience sampling:

A convenience sample (also known as an “accessible” sample) is a non-probability sample that is available at the time it is collected. Although there is no way to estimate the potential bias in this type of sample, objectivity can be planned such that the subjects are not purposefully chosen by the researcher. The researcher chooses the population units that are most suitable for him.

Example: Inclusion of those patients in a research study, who happened to come into the clinic on the data collection day.

Many samples in nursing research are convenience samples because of the availability of patient groups through treatment center.⁷⁻¹⁰

Selection of cross-national comparative research:

1. It varies with the type of construct and study requirement, but primarily the selection of cross-national comparative research based on authors distinguish concepts such as cross-country, cross-culture, cross-societal, cross-systematic, and cross-institutional, while some authors substitute ‘trans’ for ‘cross’ to suggest that they are focusing on macro-structures, and still others use the terms interchangeably.
2. In contrast, a small number of researchers may choose to focus on broad issues such as education or a specific trends such as suicide rates, and they may do so by examining existing secondary data or conducting their own original primary research. The primary goal may ultimately be to find new explanations for similarities and differences, or to get a better knowledge of social realities in various country contexts.

Grootings, for example, differentiates between “cross-national research” and “international comparative research.” Because it is considered as demonstrating the relationship between macro and micro levels, Grootings categorizes cross-national comparative research as descriptive and deductive, whereas international comparative study is analytical and deductive. However, in the English language literature, such distinctions between terminology are rarely made, and the prefix ‘cross’ is frequently used to designate studies that span countries, cultures, societies, cultures, systems, institutions, and even disciplines.¹¹

Analysis of Cross-National Comparative Research

In any cross-national comparative research, the procedure of selecting the level of analysis is critical. One of the most fundamental decisions that researchers must make while conducting health studies is at what level they will conduct their analyses. This selection is critical because health-related research encompasses a wide range of topics at both the macro and micro levels. There are various macro level

concepts and analyses in the comparative studies literature that emphasize many organizational, political, cultural, and social issues. In addition, there is a large body of work in the topic that focuses on micro level features of persons and their actions.¹²

While there is no right or wrong answer as to what research approach or level of analysis a comparative study should use, it is crucial to note that the level of study chosen indicate the type of findings that comparative research can yield. When conducting cross-national comparative research, Gauthier offers three analytical methodologies that researchers might use: aggregate level research strategy, individual-level research strategy, and multilevel research strategy. The study goal and certain assumptions about how researchers treat nations must be taken into account while choosing among these methodologies.^{12,13}

- Multivariate analysis of correlations between macro characteristics and aggregate-level approach methodologies are used to examine similarities and differences between countries in terms of certain macro-level features. This method can be used to conduct analysis using aggregate data or individual level data that has been aggregated at the country level. These studies offer their findings in terms of country rankings to draw attention to the highest and lowest-ranking countries. While studies using this technique have the ability to provide great clarifications of the links between various components at the macro level, they have failed to account for probable cross-national variances in the degree of within-country variation. Furthermore, when working with tiny samples of aggregate data, this analytical technique fails to recognize the effects of outliers.
- At the micro level, individual-level research strategies are implemented. Researchers use this method to see if results acquired in one country can be duplicated in another, allowing them to generalize conclusions across countries. When researchers employ this strategy, they can use a variety of methodologies. The most typical method is to do parallel analysis across all nations using the same variables. Researchers can use this methodology to compare and contrast similarities and differences in relationships between variables across countries.
- When researchers want to combine micro and macro level variables to recognize the possible influence of multiple levels of determinants in an individual outcome or behavior, they utilize multilevel research methodologies. “Although the potential impact of social structure and other hierarchical structures on individual behavior has long been recognized,” Gauthier says, “suitable modelling approaches have only been accessible since the early 1980s.” Even with these methodologies, most multilevel analysis studies are based on a single country design, and multilevel strategies are rarely pursued cross-nationally.^{13,14}

Research Design or Approach

1. Nation as object of study: The first design relates to scenarios in which researchers investigate the broad

validity of hypotheses across a variety of countries, cultures, and contexts. Because certain nationalities and cultures are disproportionately overrepresented in social science research, this is required and vital.

2. Studying the nation: The second design looks into how settings influence actors' conduct and attitudes at the micro level (cross-level main effects).
3. Nation as unit of analysis: The third design examines how circumstances influence the micro-level effects of individual attributes on actors' behavior and attitudes (cross-level interactions).
4. The country as part of a larger international or transnational system: Finally, the fourth design considers how micro-level actor behavior and attitudes influence macro-level characteristics. It is worth noting that this question is not very important in cross-national comparative research, because the majority of the dependent variables are either individual behaviors or attitudes, or simple techniques of obtaining such individual assessments.¹⁵

Application of Comparative Cross-Nation Design in Medical and Nursing Education

1. Durkheim's classic 1897 study of suicide.¹⁶
Emile Durkheim's study of suicide was the first sociological study ever published. Durkheim wanted to know if social forces influenced the profoundly personal act of suicide. He compared government figures on a variety of issues, including a country's religion (Protestantism or Catholicism), the rate of economic growth, and the divorce rate (among others), with the suicide rate. He famously discovered that countries with lesser levels of social integration and social regulation have a greater prevalence of suicide. He was famously chastised for a variety of reasons, one of which being his failure to account for statistical inconsistencies.
2. A 2014 study on immigration and gender equality¹⁷

Roder and Muhlau observed significant cross-national variations in attitudes toward gender equality in 2014, and they were interested in learning more about what happens to immigrants' attitudes when they move from a less gender egalitarian culture to one where gender equality is more actively promoted. They started with the following hypothesis: (a) second-generation immigrants have a more egalitarian gender ideology than first-generation immigrants, and (b) gender relations of the origin country have less influence on second-generation immigrants' gender attitudes than first-generation immigrants' gender attitudes. The authors used data from the European Social Survey a structured interview survey done every 2 years in several European nations.

They defined a "second-generation immigrant" as someone who was born in their current nation but had at least one parent who was born elsewhere. They used two items from the questionnaire to gauge gender egalitarian attitudes, both of which were Likert scale questions that asked individuals to agree or disagree with statements on a 1 to 5 scale. Research-

ers used markers including female representation in parliament, professional jobs, and wage disparities between men and women to quantify gender equality in the origin nation. 'When jobs are scarce, men should have more right to do a job than women.'

'For the sake of her family, a woman should be willing to reduce her paid work.' The hypothesis was found to be mostly valid.

Uses of Comparative Research

Example:

A descriptive comparative study was conducted to assess and compare the marital satisfaction and coping style adopted by working and non-working pregnant women attending outpatient antenatal departments of government and private hospitals in Sikkim. A total of 240 pregnant women (60 working and 60 non-working from each hospital) have been evaluated using the Enrich Marital Satisfaction Scale to assess Marital Satisfaction in four different areas of conflict resolution, communication, idealistic distortion, marital satisfaction and Bowman marital coping inventory to assess the marital coping in five different domains of conflict, positive approach, avoidance, introspective self-blame and self-interest. The findings of this study revealed that working women, regardless of the type of hospital they visited, have higher marital satisfaction than non-working pregnant women. Poor educational qualifications of self and spouse, as well as low family monthly income, appear to be contributing to the reduction in marital happiness of pregnant non-working women. As a result, counselling sessions could be useful in improving marital satisfaction.¹⁸

Another research conducted in Sikkim to assess and compare the knowledge, practice and barriers affecting utilization of family planning methods among the married couples residing in the urban and rural area of Sikkim. The main purpose of this study was to find the difference and establish the relationship between the knowledge and barriers in terms of gender and habitat and also identify the barriers affecting the utilization of family planning methods. Investigator adopted the descriptive comparative research design where 200 married couples, 100 couples (50 husbands and 50 wives) from each urban and rural areas, within the age group of 18 to 49 years (reproductive age group) and who are likely to be the consumers of family planning methods were recruited through stratified random sampling technique from randomly selected urban and rural areas of West Sikkim. Structured interview schedule on demographic data, personal data, family planning practice profile, knowledge questionnaire and barrier assessment scale were used to collect data on married couples' knowledge, practice and barriers affecting utilization of family planning methods for which validity and reliability were established. The study concluded that with the increase in the knowledge, there is a decrease in the barriers in the utilization of family planning methods in both urban and rural areas.¹⁹

Advantages of Comparative Study

Following are the advantages of comparative study:

- i. Quantitative research results are statistically reliable. Since, comparative study is a quantitative study, its result is reliable.
- ii. It can be used to determine if there is a relationship between two variables without having to directly manipulate those factors.
- iii. It can be used when it is impractical or unethical to manipulate the variable.
- iv. It is used as a basis for prediction.
- v. Comparative study makes its biggest contribution to theory by generating feasible areas of further investigation and by suggesting future hypothesis for study under more controlled conditions.²⁰

Limitations of Comparative Research Study

- i. Comparative study includes large numbers of respondents and for which, tend to cost significantly.
- ii. It does not tell researchers whether or not the relationship is causal. It does not prove causal.
- iii. Problems with equivalency (to be explained) and the types of data that can be obtained are also common.
- iv. There is also a limit on the number of cases. Comparative researchers rarely employ random sampling. For all of the world's ~150 countries, there is insufficient data. A non-random fraction of the population does not have access to it (poor countries, nondemocratic countries, etc.). When some countries have over a billion people and others have only 100,000, can a researcher regard all countries as equal units? Because there are so few examples, scholars prefer to specialize and see each case as unique, which limits generalization. A researcher might look at five samples (for example, countries), but the units differed in 20 different ways. It is tough to validate theories or develop linkages when there are more features than units.
- v. Comparative researchers are also limited in their generalizations and can only apply theory rather than test it. Despite the fact that H-C research can use and evaluate situations in their whole, comprehensive theory testing or experimental study is rare. For example, a researcher researching the effects of economic recession cannot cause one group of countries to go into recession while the others do not. Instead of analyzing other characteristics of the country or unit, the researcher waits for a recession to arise.^{12,13}

Limitations of Cross-National Studies

- Cross-national studies are often quite vast in scale, requiring significant funds to complete; getting funding can be a challenge (an agency based in one country may be reluctant to fund research that takes place in multiple countries, so sources of funding are likely to be

limited to international agencies, rather than national governments).

- Data gathered from official government sources (official statistics) may not be comparable because the categories used and the methodology of data collection vary each country.
- Data must be translated, but there is a risk that the translation will be insensitive to specific national and cultural settings. Cross-national studies can help us overcome preconceived notions about other cultures.^{17,21}

Conclusion

A descriptive methodology that analyses and contrasts aspects of social science or life across cultures or countries are known as comparative research. It is a qualitative technique or study in which researchers use a variety of methodologies, such as case study analysis, to uncover similarities and differences between entities or countries. Data collection is combined with theory or theoretical conceptions in comparative study. There are three types of data: quantitative, qualitative, and fuzzy. Quantitative comparative analysis focuses on variables, while qualitative comparative analysis focuses on examples, and fuzzy comparative analysis focuses on collections. The goal of design is to increase the chances of getting accurate responses to research questions or hypotheses. A good research design includes subjects, settings, and techniques that allow these differences to be studied clearly.

Conflict of Interest

None declared.

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