

Construction of Test and a Study on Pre Service Physical Education Teachers' Knowledge about First Aid and Primary Injury Management

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Abstract: *Physical Education teachers should be knowledgeable and confident in their content knowledge about first aid and primary injury management in to provide order high quality and effective help to the victims . This in turn makes it important to investigate the first aid and primary injury management content knowledge of pre-service Physical Education teachers. The first purpose of this study was to develop a reliable and valid instrument to measure first aid and primary injury management content knowledge of pre-service Physical Education teachers. The second purpose of this study was to examine differences in years of educational experience of the first aid and primary injury management content knowledge of pre-service Physical Education teachers. Content validity was established through consultation with group of experts and reliability through split halves method. The test was found to have a Spearman's reliability coefficient of .965, which is commonly considered an acceptable at low level of internal consistency.*

Keywords: Pre Service Physical Education, Construction of Test, physical education, About First Aid and Primary Injury Management

1. Introduction

1.1 Theoretical Background of the study

First aid is the assistance given to any person suffering a sudden illness or injury, with care provided to preserve life, prevent the condition from worsening, and/or promote recovery. It includes initial intervention in a serious condition prior to professional medical help being available, such as performing CPR whilst awaiting an ambulance, as well as the complete treatment of minor conditions, such as applying a plaster to a cut. First aid is generally performed by the layperson, with many people trained in providing basic levels of first aid, and others willing to do so from acquired knowledge. Mental health first aid is an extension of the concept of first aid to cover mental health.

There are many situations which may require first aid, and many countries have legislation, regulation, or guidance which specifies a minimum level of first aid provision in certain circumstances. This can include specific training or equipment to be available in the workplace (such as an automated external defibrillator), the provision of specialist first aid cover at public gatherings, or mandatory first aid training within schools. First aid, however, does not necessarily require any particular equipment or prior knowledge, and can involve improvisation with materials available at the time, often by untrained persons.

First aid - the care given before emergency medical help arrives - can literally mean the difference between life and death. But knowing the correct thing to do if someone has a nosebleed or cut is also important.

The key aims of first aid can be summarized in three key points:

- **Preserve life** - the overriding aim of all medical care, including first aid, is to save lives

- **Promote recovery** - first aid also involves trying to start the recovery process from the illness or injury, and in some cases might involve completing a treatment, such as in the case of applying a plaster to a small wound.
- **Prevent further harm** - also sometimes called prevent the condition from worsening, this covers both external factors, such as moving a patient away from any cause of harm, and applying first aid techniques to prevent worsening of the condition, such as applying pressure to stop a bleed becoming dangerous.
- **Importance of first aid**
- First aid is essential in emergency cases. Knowing what action needs to be taken to control an emergency can make the difference between life and death. Emergencies occur all around us, in all spheres of life. Someone may be injured at work, school or at home. When this happens, first aid basics will equip anyone around the injured person to reduce the danger posed by the accident.

Background

Injuries and accidents are the leading causes of death in children worldwide. Children are prone to unintentional injuries and are at a higher risk of experiencing injuries, because their bodies are developing and they have not yet learned to be aware both of themselves and various environmental dangers. Because children spend a significant portion of their day in child-care centers, pediatric emergencies such as the exacerbation of existing medical conditions or accidental physical injuries are more likely to occur in those settings. Unintentional injuries, such as falls, bruises, and bumps likewise occur in child-care programs. Schools and playgrounds are the most common location for falls. And approximately of reported injuries in child-care settings involve bites. In the United States, annual injury rates range from 0.7 to 5.1 injuries per child. Injury alone accounts for almost one half of all deaths in preschool-aged

children in the USA. In China, injury accounts for a third of all deaths in children aged 1 to 4 years, and one half of all deaths in children between 5 to 9 years of age. The rate of accidental injury was 10.94% among preschool children in Shanghai; the most common injuries included falls, collisions and extrusions, and sprains. Compared to non-school-based emergency medical service (EMS) incidents, school-based EMS incidents are more often attributable to injury, more often related to a sports activity, and more often result in transport to a medical facility.

Most injuries in preschools are require only first aid treatment; therefore, preschools are important locations to focus on the prevention of injuries and diseases in children, because situations requiring first aid are often encountered there. Leila et al. described the first aid used and resulting clinical outcomes of all patients who arrived at a children's hospital with an acute burn injuries. They found that correct first aid was associated with significantly reduced re-epithelialization time for children with contact injuries; likewise, some positive clinical outcomes were associated with correct first-aid use. This shows there is a need for a higher public awareness of correct first-aid treatments. Administering correct and timely first aid to patients after accidents is vital and can potentially save lives. In schools, staffs are often first-aid providers it has become important to determine the current perceptions held by school.

Trained individuals who are closest to the scene of the accident should administer first aid, first aid training for regulated day care providers may contribute to children's health and safety. A pediatric first aid training program for the staff members at Shanghai preschools has already begun. This program will equip all 35,000 current preschool employees in Shanghai with medical first aid knowledge and skills. Concurrent with the training program, a baseline survey was conducted on the preschool staff members. The goal of the current study was therefore to use questionnaires to evaluate preschool employees' knowledge of and attitudes toward first aid measures for the management of ill and injured children.

Who needs first aid training?

First aid basics are a good skill to have for anyone. It is necessary for people dealing with children to know basic first aid. This includes parents, teachers, and nannies. Workers who are regularly exposed to dangerous machinery need to have first aid skills in case of injuries. Travel buffs may find it necessary to know first aid, especially if they spend a lot of the time outdoors. This is due to the risk of bug and spider bites, or breaking limbs while hiking.

First aid has been proven to save lives. Learning basic first aid will help anyone save a life in an emergency.

The person giving first aid, the first-aider, deals with the whole situation, the injured person, and the injury or illness. He knows what not to do as well as what to do; he avoids errors that are frequently made by untrained persons through well-meant but misguided efforts. He knows, too, that his first aid knowledge and skill can mean the difference between life and death, between temporary and permanent

disability, and between rapid recovery and long hospitalization.

Need of first aid knowledge to physical education teacher

Students are more excited to play in physical education class to play, they enjoy and do different physical activities which may result in minor or major injuries if done in wrong way or without proper warm-up. If any student gets injured only physical education teacher person is a prime responsible person to look after such injuries. In any school if any student get injured only physical education teachers are called to look after the injuries. Injuries such as abrasion, fracture, swelling etc. Can happen when students are playing in physical education class or in recess. As physical education teachers have knowledge about anatomy, physiology sports etc. They should also have knowledge of injuries and their first aid so that proper treatment can be given to student who gets injured.

1.2 Statement of the Study

The purpose of this study is twofold: the first purpose of this study is to develop reliable and valid instrument to measure appropriate first aid and Construction of test and a study on pre service physical education teacher's knowledge about first aid primary injury management first aid content knowledge of elementary physical education teachers. The second purpose of this study is to examine differences between first year and second of first aid experience first aid content knowledge of in-service elementary physical education teachers.

1.3 Significance of the study

A significant amount of research has identified numerous health benefits from regular participation in first aid during injury Also, school-based physical first aid has been identified as one of the primary vehicles responsible for promoting safety of students and helping the victims.

1.4 Objective of the study

- 1) To construct design knowledge test of first aid and primary injury management.
- 2) To assess measure teacher knowledge about first aid and primary injury management.
- 3) To compare between the knowledge of student teachers at different levels at masters.

1.5 Hypothesis

H: There will be no difference between the first year and second year master's pre-service Physical education teacher in performance on the first aid and primary injury management content knowledge test.

1.6-Assumptions

The following assumptions were made for this study:

- 1) It was assumed that the multiple choice test designed by the researcher accurately measured appropriate Construction of test and a study on pre service physical

Education teacher's knowledge about first aid primary injury management

- 2) It was assumed that all elementary physical education teachers completed the appropriate first aid primary injury management content knowledge test to the best of their ability, honestly, and as instructed by the researcher.

1.7 Delimitations

- 1) The study is delimited to the master degree student of CACPE and Department of physical education.
- 2) The study is delimited only questionnaire.

1.8 Limitation

Several limitations influenced the results of this study including the following:

- 1) This study was limited to a convenient sample from CACPE and Department of physical education University of pune.
- 2) The test used in data collection may pose as a limitation.

1.9 Operational Definitions

- 1) **First aid** - the care given before emergency medical help arrives - can literally mean the difference between life and death. But knowing the correct thing to do if someone has a nosebleed or cut is also important. First aid is important because it is the essential primary care given to an injured person hence the name, "first aid". If a person were simply thrown in the back of the ambulance on route to a hospital then it would be possible that he or she could bleed out where as if proper first aid were given they might have lived. First aid is important because it is an immediate care...
- 2) **Pre-service Physical Education teachers:** refers to postgraduate student pursuing masters in Physical Education. At Chandrashekhar Agashe College of physical education & department of physical education of pune. 2015
- 3) **Knowledge about first aid** - Is the knowledge of all the cognitive aspects its include prevention, treatment and knowledge needed by the teacher or coach.
- 4) **Primary injury management-** Injury Management primarily focuses on early reporting, rehabilitation and return to work strategies, all designed to assist the injured individual make an early and safe return to the workplace.

2. Methodology

Pre-service physical education teacher's content knowledge about first aid and primary injury management will be assessed in this study. The purpose of this study is to develop a valid instrument to assess first aid and primary injury management content knowledge of pre-service teachers and to assess the knowledge. The 3rd chapter includes research design population sample. Data collection tool, statistical tools, tool development procedure and procedure of the study.

2.1 Design of the study

Teacher content knowledge has been identified as a crucial component for effective teaching. Limited research has been conducted on the content knowledge of teachers in the area of appropriate test knowledge about first aid and primary injury management .The purpose of this study is twofold:

- The first purpose is to develop a reliable and valid instrument to measure appropriate knowledge test about first aid and primary injury management.
- The second purpose of this study is to assess the knowledge of pre service Physical Education teachers and compare the knowledge first year and second year student Physical Education teacher.

2.2 Variables

In this study the dependent variable is teacher content knowledge of appropriate first aid and primary injury management. The independent variables addressed in this study are highest degree attained.

2.3 Population and the Sample

The participants in this study are pre service physical education teachers from CACPE and Department of physical education (Pune University) the selected samples are pre-service teachers undergoing post- graduate course in physical education. This represents a convenient sample of the available pre-service physical education teachers in Pune . Total No. Of students studying the pre service in physical education teachers in both the years. From this population researcher will select students optional Englisha medium of instruction? This number is 55

2.4 Data Collection Procedures

The researcher developed knowledge test about first aid and primary injury management as data collection tool. Following all the scientific & systematic procedures the develop. Tool knowledge test about first aid and injury primary management.

1. Test content area
2. Test item construction Content validation
3. Test administration
4. Test analysis
5. Test planning

2.5 Tool Development Procedure

The following steps are followed for construction of the data collection tool:

- 1) Test planning: For the development of the tool researcher will decide the sample on whom to conduct the study by discussing with the research guide.
- 2) Test content area: The researcher has decided the content areas such as measurement, knowledge test, and injury management in exercise. In that the researcher wanted to assess the factors liketreatment, knowledge and prevention.
- 3) Test item construction: researcher after consulting expert and literature determined questions to assess the contact

- knowledge. Questions was multiple choice where student have to choice an option.
- 4) Item analysis: After doing administration and scoring the researcher was ready to determine the quality of the items through statistical procedure. Item analysis is divided into 3 parts.
 - Item difficulty it indicates which question was easy and hard to answer .After doing the pilot study the researcher was able to identify which item was hard and easy for the students.
 - Item discrimination item discrimination determines how well the item differentiates between the good student and poor student. It discriminates students with high scores and with low scores.
 - Response quality: The questionnaire is a multi-choice test in the questionnaire consists of four distracters and one correct response. One response should be selected from the each question by the pre-service physical education teachers.
 - 5) Item revision: after item analysis researcher has revised the questions by the discussing with the guide.

2.6 Procedure of the Study

- 1) After the tool is developed the researcher taken permission from the head of Department at Chandrashekhar AgasheCollege of physical education andDepartment of physical education of pune.
- 2) Researcher administered the knowledge test and collect data.
- 3) Data analysis was be done.

Table 3.1: Item analysis

No. of question 36	item diff index	Item disc index	final decision
Accept	22	21	20
Reject	14	15	16
Modify	3	3	Total =20

Items falling between difficulty index of .30 to .79 were accepted. Items falling between discrimination index of 0.2 to 0.4& above were accepted.

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Table 3.2: Final composition of the first aid and primary injury management content knowledge test.

No. of questions	Knowledge	Prevention	Treatment
20	12	4	4
Percentage	60%	20%	20%

3. Findings

- 1) Modification of knowledge test: By doing analysis some questions were accepted, rejected & few were modified. Some was rejected because of low index in item difficulty & item discrimination.
- 2) Final questionnaire: Final questionnaire consists of 20 items. Questionnaire was in English language . In each item four options & one correct answer.

- 3) Statistical tool used in the study: Content validity was established by a group of university professors with expertise in the field of physical education The first aid and primary injury management test was piloted on the of 10 pre-service PE teachers. A group item analysis was conducted on the first aid and primary injury management test as a part of the pilot study. Reliability was established through split method. Coefficient of halves correlation of reliability was for the performance of first aid and primary injury management content knowledge test.

4. Data Analysis and Interpretation

4.1 Introduction

This study examined teacher content knowledge about first aid and primary injury management of pre-service physical education teachers. This study was designed to develop a reliable and valid instrument to assess measure teacher knowledge about first aid.

The about first aid and primary injury management content knowledge test was designed and validated to assess about first aid and primary injury management. The test consisted of twenty multiple choice test items. Each multiple choice question consisted of a stem and four possible answers, one correct and four distracters. Questions were divided into three categories: (1) knowledge (2) treatment and (3) prevention, each including items such as concepts, definition, assessments. And guidelines. This first aid and primary injury management test was conducted on sample of 50 pre-service physical education teachers of CACPE and DPE (up) through descriptive survey.

4.2 Reliability estimate of first aid and primary injury management test

The main purpose of the study was to develop a tool to examined teacher content knowledge about first aid and primary injury management of pre- service PE teachers. The tool development employed systematic procedure an including item analysis-item difficulty, item discrimination. These are presented in the earlier chapters. After the completion of tool development in this way, the reliability was calculated using split half technique the details of which are given below. The details of this analysis are given in table no 4.1

Table 4.1: Reliability of the knowledge about first aid and primary injury management test

Test	Correlation Coefficient	Significance level
Spearman's rank order correlation in odd and even items	.965	.000

Reliability of the 20 multiple choice knowledge test was estimated using spearman rank order method. From the table 4.1 it can be seen that the coefficient of correlation is 0.965 and is significant at .000 level.

4.3 Demographic characteristics of the sample

Table 4.2: Demographic characteristics of the pre-service PE teachers on about first aid and primary injury management test

Variable	Frequency	Percentage
Gender		
Male	39	70.9
Female	16	29.09
Highest degree arraigned		
Med 1 Year	28	50.9
Med 2 Year	27	49.09

All participants in this study were pre-service physical education teachers pursuing teacher training program. The participants (female 16, male 39,) ranged from 22 to 44 years (M = 10.03, SD= 29.03). Table 4.2 presents the demographic characteristics of the sample of pre-service physical education teachers participating in this study.

4.4 performance of the pre-service teachers on the first aid and primary injury management content knowledge test

Table 4.3: Descriptive analysis of performance on first aid and primary injury management test

	Masters 1 year	Masters 2 year	Total Masters
Mean	9.071	11.00	10.01
Median	8.50	11.00	10.00
Mode	7.00	11.00	1.00
Minimum	4.00	4.00	4.00
Maximum	16.00	16.00	16.00
SD	28.79	29.22	3.03
Skewness	0.795	-0.58	0.98
kurtosis	0.31	0.41	-0.60

A total of 55 pre-service physical education teachers pursuing master’s teacher training program participated content knowledge about first aid and injury primary management. Their performance on knowledge was analyzed based on the correctness of the answers provided in the test. The sample was divided into three for the purpose of analysis, these groups were first year masters students, second masters students year and total students. The analysis is given in table no 4.3 and depicted in figure 1. The score range of this test was **0 to 20**. For the present sample mean performance for first aid and injury primary management was found to be **(10.01)**, **(SD 3.03)**. The median score on the test was between **8.50 to 11.00** for the three group which means 50% pre-service teachers scored were 50% below and 50% above less than this or more than this. The lowest performance has found very low which is 4 and highest has been found 16. Analysis were done for the entire group and also separate for first year masters students, second year masters students and total students. The mean score on the test was between **9.07 to 11.00** for the masters students first year and masters students second year. The standard deviation score on the test was between **2.87 to 3.03** for the masters students first year and masters students second year.

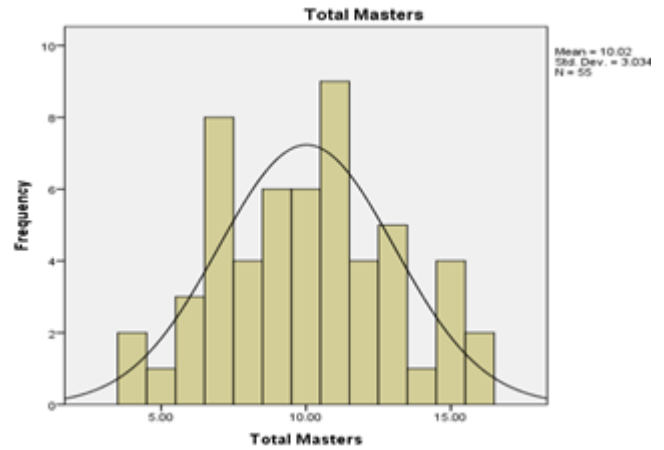


Figure 1: Performance of the pre-service teachers on the first aid and primary injury management content knowledge test.

4.5 Hypothesis Testing

4.5.1 Summary of Null Hypothesis.

H0 There will be no significant difference between the first year student and second year student’s master’s pre-service Physical education teachers in the performance on first aid and primary injury management content knowledge test.

Table No. 4.4

Hypothesis test summary

Null Hypothesis test sig. Decision

The distribution of total master independent Reject the
 Is the same across categories samples Mann? .024 null
 of group Whitney U hypothesis
 Test

Asymptotic significances are displayed. The significance level is .05

The hypothesis was examined using Mann-Whitney U test. The hypotheses were tested for differences between first year master student and second year master students as they relate to teacher content knowledge about first and primary injury management .The alpha level was set at the 0.05 level of significance. Table no. 4. 4 displays significant differences were found for teacher content knowledge about first aid and primary injury management. **Therefore null hypothesis was rejected.**

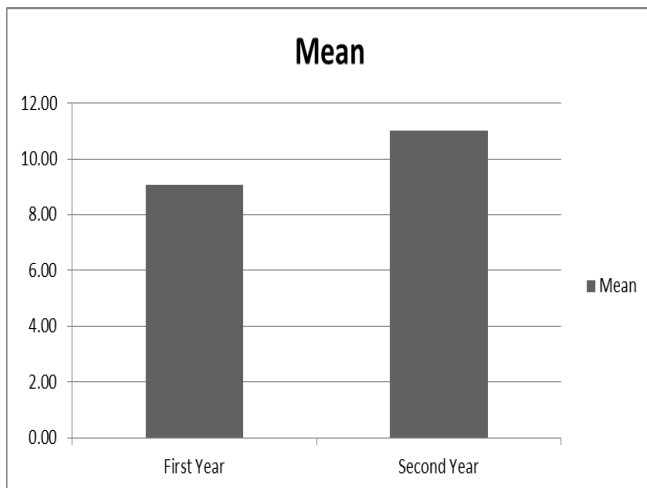


Figure 2: Comparative graph showing performance of First Aid and Primary Injury management content knowledge test

4.6 Discussions of the Overall First Aid and Primary Injury Management Test Performance

Increased knowledge of first aid and primary injury management concepts, such as basic first aid training, continuing education courses and clinics, increasing the knowledge about the CPR, instant emergency management, thus, teachers need urgent, correct and repetitive trainings on the first aid process and primary injury management. Will result in increased the knowledge (Asad Abbas, Syeda Ismat Bukhari, Farah Ahmad³ (2011) Necati Hırça (2012), Lynn Castro (2010), Redfearn (1980)) pointed out that first aid knowledge and primary injury management knowledge were predictive of first aid activity and knowledge predicted maintenance of moderate and vigorous first aid. This study examined first aid and primary injury management, content knowledge of pre-service physical education teachers using the first aid and primary injury management questionnaire included many concepts such as of the treatment of injury, knowledge and prevention that physical education teachers will be expected to help their students.

Pre-service Physical Education teachers must continue to development, obtain new knowledge and remain abreast of new developments in the field in order to provide high quality instructions to their students. Castelli and Williams (2007, (the effectiveness of professional development is compromised by the amount of teacher responsibilities as well as the accelerating pace of first aid and primary injury management knowledge keep abreast of new developments. With regard to years of educational experiences, no significant differences were found on the first aid and primary injury management test scores between first year masters students and second year masters students.

5. Summary, Conclusions and Recommendations

5.1 Summary

National content standards suggest that physical education instruction should provide students with an understanding of how to achieve knowledge enhancing level about first aid and primary injury management as well as regular

participation in developmental courses. It is crucial that Physical Education teachers be knowledgeable and confident in their own content knowledge about first aid and primary injury management to provide high quality and effective instruction to their students. This study examined teacher content knowledge about first aid and primary injury management of pre-service PE teachers.

After the test was piloted and revised by discussing with guide. Teacher's demographic characteristics such as gender, and years of educational experiences were collected as a part of this study. Reliability analysis indicated that the first aid and primary injury management test have a Spearman's reliability coefficient of .965 which is commonly considered low level of internal consistency. Teacher scores were computed for the overall first aid and primary injury management content knowledge test performance and expressed as mean percentages. Mann - Whitney U Test was used to examine the influence of years of educational experiences on first aid and primary injury management content knowledge. The first aid and primary injury management content knowledge test was developed. Please refer to Appendix B for complete version of the test.

5.2 Conclusions

Based on the findings of this study, the following conclusions were made :

- 1) The first aid and primary injury management test appeared to be a valid and reliable measure of teacher content knowledge about first aid and primary injury management of pre-service Physical Education teacher .
- 2) Years of educational experiences influenced teacher content knowledge about first aid and primary injury management of pre-service Physical Education teachers.
- 3) Even if second year student performance move , oral pre-service teachers' performance was found to be very low on the first aid and primary injury management content knowledge test. Thus is can be concluded that the pre-service teacher's knowledge about first aid is poor and Physical education teacher education program should take a servicenote.

5.3 Recommendations for Further Research

Future research on the topics considered in this study includes the following:

- 1) Physical Education Teacher Education Programs should be evaluated to determine if content knowledge of appropriate first aid and primary injury management is pertinent for future physical education teachers.
- 2) The effectiveness of professional development should be evaluated in future studies.
- 3) Pre-service physical education majors should be assessed on teacher content knowledge about first aid and primary injury management and compared with in service PE teachers.

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