EFFECTIVENESS OF AUDIO-VISUAL MEDIA AS A METHOD OF TEACHING ASSESSMENT OF DARK SKIN FOR COLOR CHANGE

A THESIS

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BY

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DEDICATION

This thesis is dedicated to the special people in my life.

To my mother, KATY TANNER, who has been an inspiration and guiding force in my life.

To my daughter, CATHERINE, to whom I hope I am able to be all those things my mother has been to me.

ACKNOWLEDGMENTS

A sincere thank you to each member of my committee.

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A sincere thanks to a very special friend--FRANCES SMITH who was my shoulder to lean on, and a great source of support.

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Finally a sincere thanks to MARIE FOSTER BRANCH, in whom I found a role model and the inspiration to pursue this study.

Carson Easley

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CHAPTER 1

INTRODUCTION

Variations in color and temperature of the skin and appendages are major indicators of changes in the patient's homeostatic balance. Proper skin assessment is an essential tool for obtaining pertinent data concerning the patient's physiologic status. Yet for many practitioners, assessment of skin for color changes in dark-skinned individuals remains an assessment problem. This is in part due to lack of experience in techniques of assessment of skin color changes in a culturally diverse patient population; scant resource material; and lack of trained practitioners with expertise in this area. Where and how can practitioners acquire expertise in this area of assessment?

One method of instruction that appears appropriate to acquisition of this type of knowledge is modular instruction utilizing audio-visual media. With the utilization of this instructional method, consistent and accurate information can be delivered to a diverse learner population allowing for individual learning styles and needs.

A modular instructional program has been marketed which includes a unit on assessment of dark skin. Therefore, this study was undertaken to investigate the effectiveness of this unit of information as presented by audio-visual media in the classroom setting in the area of cognitive domain.

Statement of Problem

Is modular instruction, utilizing audio-visual media, an effective method of teaching assessment of dark skin for color change?

Statement of Purposes

1. To test the effectiveness of modular instruction in teaching assessment of dark skin for color change.
2. To measure the amount of knowledge gained in the cognitive domain as exhibited by the difference in the pretest and posttest results.
3. To enable participants to view techniques that are effective in diagnosing color change in dark-skinned individuals.

Justification of Problem

The physiologic functions of the skin to the human system are multiple. It is described as the body's first line of defense, protective agent, and temperature regulator. "The skin and its appendages are easily observed; inspection of them may indicate the presence or absence of patho-physical changes and their progress" (Mitchell 1973, p. 412.) The skin mirrors the patient's internal processes, thereby reflecting disease conditions.

In the process of assessing the skin for warmth, color moisture, and temperature, the practitioner will be obtaining vital information concerning the patient's physiological status (Roberts 1975, p. 610). Yet literature reveals that, "Cyanosis still remains the most difficult sign to observe in people of color" (Branch and Paxton 1976, p. 182).

Presently cyanosis is not the only problem area of assessment in dark-skinned individuals. Pallor, jaundice, and other skin color changes such as erythema have been identified as difficult to diagnose in persons of color. According to Roach (1977, p. 49), the patterns of pigmentation in dark-skinned persons can obscure changes in color that can lead to misinterpretation when being observed by an inexperienced

practitioner. Branch and Paxton (1976, p. 183) noted that edema presents color distortions in the darkly pigmented person due to the increase of the distance between the skin surface and the vascular and pigmented layers. They further observed that this type of distortion may make it difficult to diagnose such pathologic conditions as pallor of anemia. White (1976, p. 31) states that streaking and redness may not be easily visible in highly pigmented persons and therefore clients must be assessed for pain, warmth and tenderness.

Since skin tones and coloring vary greatly, there cannot be a chart listing colorations for all groups that will be indicative of patients in physiological danger. Nursing practitioners can be taught methods of assessing color changes in dark-skinned persons which will enable them to make qualified decisions concerning the patient's physiological status.

Modular instruction utilizing audio-visual media appears to be an appropriate method of teaching assessment of dark skin for color change.

> Modules afford the opportunity to develop, evaluate, and use a variety of media to optimise instruction for students on a given topic. The approach can be carefully and deliberately

> sequenced, tried out with students and revised until the maximum achievement is demonstrated by the most students. Careful evaluation makes it possible to measure and predict the effectiveness of each module. (Russell, 1974, p. 3)

Russell (1974, p. 3) stated that within modular units, media such as films, audio tapes, models and written text, can be utilized. He showed that modular design can be constructed as to encourage interaction between participants. Since modular instruction supports individualized learning, uniform instruction is provided for a large number of students on an individual basis. Russell explained that participants can acquire knowledge at a pace comparable to their own ability and that in this type of learning experience the learners are in control of the study situation.

The importance of the ability of nursing practitioners to accurately assess skin color changes in dark-skinned persons cannot be over emphasized. A one time lecture method is not the most effective means of teaching skills of skin assessment. Through participation in a modular instruction unit, the learners can review and practice skills as often as needed at their own rate and on an individual learning basis. The end product of this learning process is that practitioners will be able to collect data accurately

through the physical assessment of the skin for color changes in dark-skinned individuals. Coupled with other data gathered during history and physical exam, practitioners will be able to arrive at knowledgeable decisions concerning the client's nursing needs (Mitchell 1973, p. 74).

Theoretical Framework

Physiology of skin color provides a basis for the theoretical framework supporting the need for assessment of skin for color changes. As stated in Jones, Dunbar, and Jirovec (1978), "The normal skin color is determined by variables such as hereditary characteristics and the amount and distribution of exposure to sunlight" (p. 289). Other physiologic determinants which affect skin color are:

> (1) superficial capillaries and venus plexuses that provide red tones of oxyhemoglobin and blue tones of reduced hemoglobin;
> (2) melanin that provides the shades of yellow, brown and black:
> (3) melanoid and carotene that provide additional tints of yellow. (Jones et al. 1978, p. 289)

Roberts (1975, p. 610) stated that as light is penetrated through the layers of skin and reflected back and modified by skin pigments, then skin color is perceived.

Superficial capillaries play a part in reflecting normal redness of an individual's skin. In the dark-skinned person, normal redness is concealed by pigmentation. According to Jones et al. (1978, p. 289) absence of this redness produces pallor and although difficult to assess, it can be diagnosed by a trained observer. They further stated that, "The brown-skinned person with pallor will appear yellowish brown and the black-skinned person will appear ashen gray; both color changes reflect the loss of the normal underlying red tones" (Jones et al. 1978, p. 290). Jones et al. made the distinction that when blood contains a minimum of 5 g reduced hemoglobin per 100 ml of blood, cyanosis appears (p. 290). They observed that in persons of dark skin, pigmentation may obscure cyanosis and that in these persons the nail beds and mucous membranes afford the most accurate areas for inspection of this condition (Jones et al. 1978, p. 290).

Roberts (1975, p. 613) stated that when the skin and mucous membranes contain a yellowish coloration, bile pigments are discoloring the plasma and the condition is known as jaundice. She further stated that

if jaundice occurs it can be generally assessed in the skin and sclera. But Roach (1977) noted that:

> Many darkly pigmented individuals have heavy deposits of subconjunctival fat containing enough carotene to mimic jaundice. The fatty deposits become heavier as the distance from the cornea increases, so inspecting the portion of the sclera revealed naturally by the lid slit may provide the most accurate assessment of skin color. (p. 51)

In order to assess the above conditions as evidenced by skin color changes, the practitioner must be aware of alternative routes of assessment as they apply to this segment of the population.

Several learning theories have been reviewed and incorporated to form a theoretical framework for the utilization of modular instruction units. Principles as described by Hilgard and Bower (1966) that are contained within Stimulus-Response theory and that are applicable to this study are:

1. The learner should be active, rather than a passive listener or viewer. The S-R theory emphasizes the significance of the learner's responses, and 'learning by doing' is still an acceptable slogan.
2. Frequency of repetition is still important in acquiring skill, and in bringing enough overlearning to guarantee retention. . . .
3. Reinforcement is important; that is repetition should be under arrangements in which desirable or correct responses are rewarded. . . . It is generally found that positive reinforcements (rewards, successes) are preferred to negative reinforcements (punishments, failures). (pp. 562-563)

Cognitive theory supports the idea that rote learning and learning by formula are less acceptable than learning with understanding which is a more permanent and transferable quality (Hilgard and Bower 1966, p. 563). Modular instruction enables the learner to strive for understanding of material which can be then transferred into clinical practice.

The final principles as described by Hilgard and Bowers are adapted from motivation and personality theory. Qne principle is that the learner's abilities are important. That is when constructing learning experiences, the instructor must take into account slower versus rapid learners and those learners with special abilities. This theory also placed emphasis on the group atmosphere of learning. It takes into account situations such as competition versus cooperation, authoritarianism versus democracy and individual learning versus group identification. All of these factors will effect the learners satisfaction in the learning experience and the end products of the learning situation (Hilgard and Bowers 1966, p. 564).

With the use of modular instruction, these principles can be adapted in order to formulate a learning

experience which will meet the needs of the individual learner.

Assumptions

The following assumptions have been generated from the theoretical framework:

1. Learning is a process done by learners.
2. Description of color is subjective.
3. Achievement of skin color assessment is dependent on individual skill.
4. Participants have interest in subject matter.
5. Assessment of dark skin can be taught.
6. Learning ability is individual.

Hypothesis

Modular instruction, utilizing audio-visual media, is an effective method of teaching assessment of dark skin for color change.

Definition of Terms

1. Skin assessment--observation through touch and sight the skin and appendages including conjunctiva and sclera, hard and soft palate, ear lobes, buccal musoca, palms, fingernails, soles of feet and toenails.

2. Skin color changes--those variations in an individual's "normal coloring" that may be indicative of cyanosis, pallor, jaundice and erythema.

3. Modular instruction--a method of instruction which utilizes a variety of media to teach a short unit or course (Russell, 1974).

4. Dark-skinned individuals--nonwhite persons of color such as Asians, Blacks, Native Americans, and Mexican Americans.

5. Cognitive domain--knowledge and understanding that involves the recall of concepts and principles and their application to problem solving situations (Coffey 1975, p. 5).

6. Pretest--method of measurement of objectives of the learning module (Coffey 1975, p. 15).

7. Posttest--method of measurement of objectives upon completion of the learning module (Coffey, 1975, p. 16).

8. Student--individual enrolled in an institution of higher learning.

Limitations

Variables which will have a bearing on the outcome of the study are:

1. Participants color perceptions or visual acuity.

2. Participants positive or negative prejudices regarding dark-skinned persons.

3. Participants with auditory difficulties which are unknown to the investigator.

4. Different methods and rates of learning.

5. Age, sex, cultural/ethnic background, and social status of participants.

6. Reasons for which participants volunteer to participate in study.

7. Participants intelligence.

8. One time viewing of audio-visual media.

9. One group pretest-posttest design.

10. Hawthorne and Halo effects.

Summary

The importance of skin assessment as a means of ascertaining data concerning the patient's physiologic status has been documented. Exploration into problem areas of assessment has revealed that many practitioners are having difficulty assessing color changes in dark skin. Areas found to be most difficult, were in diagnosing clinical signs such as cyanosis, jaundice, pallor and erythema. It was specifically noted that these

signs were going undetected by untrained practitioners.

Discussion ensued as to an instructional method which would be most appropriate in teaching assessment of dark skin. Modular instruction was found to be an appropriate methodology. Then the problem statement was formulated. This study was concerned with answering the question, Is modular instruction, utilizing audio-visual media, an effective method of teaching assessment of dark skin for color change?

CHAPTER 2

REVIEW OF LITERATURE

The review of literature is divided into three sections. The first section will discuss the importance of and need for practitioners that are trained in assessment of dark skin for color change as related to physiologic response to illness. Application of teaching strategies for inclusion of this content in curriculum development will be discussed in the second section. The final section will explore modular instruction as a method of teaching skin assessment. It will also discuss a research study which examined the effectiveness of a self-instructional module in teaching a specific content.

Importance of Skin Assessment

The central thesis of this paper is that skin assessment for color change is an essential aspect of providing quality patient care. Branch and Paxton (1976) contend that, "Ethnic people of color are not receiving safe, effective nursing or medical care when consideration for cultural and ethnic differences are

omitted from nursing care plans and medical regimen" (p. 5). They stated that in some instances life saving therapies may not be utilized because care givers cannot provide safe and effective care for a culturally diverse patient population. This would include the omission of giving oxygen therapy when care givers cannot recognize cyanosis in dark-skinned people (Branch and Paxton 1976, p. 5). They warned that this problem would continue if health practitioners are not given proficiency in the ability to recognize variations in skin color in physiologic conditions. They stated that practitioners should be able to distinguish color changes in a variety of tones and coloring (Branch and Paxton 1976, p. 5).

Applications to Curriculum Development

Branch and Paxton (1976) described strategies to include diverse cultural content in curriculum development. Objectives were formulated and as a part of teaching strategies it was recommended that film strips and slides be utilized to assist learners in acquiring skill in assessment of dark skin (Branch and Paxton 1976, p. 220).

Block and Hunter (1981) described teaching strategies which included objectives, content area, student evaluation and clinical experiences for teaching assessment of dark skin. Their program was implemented in a four semester course and was aimed at providing beginning nursing students with ". . . an awareness of the physiological differences in dark skin pigmentation as well as black person's special needs" (Block and Hunter 1981, p. 24). They wanted students to understand that there are no differences in physiologic response for black and white patients but that pigmentation may obscure or influence how physiologic processes are perceived. They also stated that skin color changes can occur in other races of darkly pigmented people. It was concluded that there was a need for this content and that students not only learned skills specific for a target population but also improved their overall skills of assessment. They found that students viewed this as a positive experience and were able to apply knowledge acquired to the clinical setting.

Advantages of Modular Instruction

Russell (1974, pp. 25-26) stated that as a major vantage point, modular instruction places the main

emphasis on learning, while the conventional lesson places the emphasis on teaching and teacher performance of teaching skills. The conventional lesson is aimed toward the group and modular instruction is aimed toward the individual learner. The participant can review the modular unit as often as desired, while the lecture is a one time experience. In lecture method, the learner's role is passive, such as reading the text or listening to the instructor. When participants are reviewing a module, they are actively manipulating instructional material to meet learning needs.

Santopietro (1981, p. 14) described the investigation of effectiveness of a module developed for human sexuality counseling of male myocardial patients. She employed a pretest-posttest control group design to ascertain baseline data about comfort measures and sexuality counseling in a sample population of nursing students. Her findings indicate that there was a change in terminal behavior as exhibited by posttest results. Implications were that there was a positive change in knowledge and comfort/behavioral intentions of participants (p. 18). This study supports the idea that modular instruction is effective in teaching

specific content to students studying nursing phenomena.

Summary

Literary review pointed out the importance of skin assessment for color change and specific applications for dark skin. Implications for curriculum development was explored. Research as related to the effectiveness of modular instruction in teaching specific nursing content was discussed. Although, no studies were found which investigated modular instruction with regards to the content in this study, applications could be generalized as to the effectiveness of modular instruction in teaching nursing concepts.

CHAPTER 3

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

For the purpose of this investigation a one group pretest-posttest design was utilized. The main focus of experimental research is predicting outcomes for the future. Although the one group pretest-posttest design does not fall within the area of true experimental design, it does fall within the range of preexperimental design. As defined by Notter (1978, pp. 69-71), in this instance something new has been introduced into a situation and methods applied to measure the effect on the situation.

This preexperimental study was designed to test the effectiveness of audio-visual media in teaching assessment of dark skin for color change as represented by measurement of pretest-posttest results. After tests were tabulated, statistical analysis of collected data was performed to ascertain if a significant difference existed between pretest and posttest findings.

This chapter details a description of the collection and treatment of data. It is divided into six

sections. The first section describes the setting in which the investigation took place. Population and sample are described in the second section. The third section discusses how protection of human subjects was obtained. The fourth section presents the instrument used for data collection. Procedural steps for collection of data is described in the fifth section and the final section presents a complete account of treatment of data.

Setting

The study was conducted in a Vocational Nursing Program in a Community College located in Central Texas. The setting was a classroom located on the second floor with approximately 55 wooden desk in rows facing a podium and chalk board. The room was well lite from sunlight and artificial lighting. The temperature was comfortable. Various bulletin boards and charts were along the four walls. None were found to be distracting to the subject being presented. Four window air conditioning units were present and two were in operation during the investigation.

Population

The total population was predominantly characterized by white females between the ages of 18 and 50. Of approximately 130 students enrolled in the Vocational Nursing Program, 2-5 percent were male, less than 10 percent Hispanic and 10 to 12 percent were Black. Of this population approximately 55 students were enrolled in Level III.

The nonrandom sample as described by Downs and Newman (1977, p. 5) consisted of 24 participants. The total sample was lower than projected. It seems that even though subjects appeared in agreement with the goals and directions of this study during the presentation, only 24 students were willing to participate on a voluntary basis.

Level III students were selected as the sample population. Rationale for their selection are as follows: this group of students most familiar with medical terminology, as presented in the audio-visual media, most experience in clinical setting, and most experience in vocational nursing program. All 24 subjects were from Level III.

The sample population consisted primarily of white female students with a predominate age range of 18 to

32. This was generally consistent with the total population.

Protection of Human Subjects

Prior to this investigation, permission for the study was received from the thesis committee and the Human Research Review Committee of Texas Woman's University. A copy of the Human Research Review Committee permission letter is presented in Appendix A.

Agency permission was obtained after the investigator verbally explained the scope, methodology and goal of this study. A copy of the Agency Permission for Conducting Study is shown in Appendix B.

Instrument

The instrument utilized in this study consisted of three sections. The first section labelled "Participant Information Sheet" was used to obtain personal data. The second section was a pretest-posttest that was developed by the investigator from audio-visual media content. The final section labelled "Evaluation Tool" was used to allow participants to evaluate experience in the study. The instrument is presented in Appendix D.

The pretest-posttest consisted of a 15 question, 4 factor, objective test and was used to measure if there was a significant increase in posttest results as compared to pretest scores after treatment with the audio-visual media content. Each question was given a numerical value of one.

Content validity of the pretest-posttest was established by consultation with an instructional person who has expertise in the area of assessment of dark skin and has knowledge and experience in test construction (Notter 1978, p. 91). This consultator viewed the pretest-posttest and the audio-visual media and verified that questions pertained relevantly to content material. None of the questions were found to be unclear or contain ambiguity.

Data Collection

Sample population was selected in accordance with previously mentioned criteria. On a date prior to the study, the investigator presented the aims and procedure for participation in the study to prospective participants. Approximately 10 minutes was required for presentation and the audience was allowed time for questions. It was emphasized that participants were to participate on a voluntary basis.

On the day of the study, each participant was given a written explanation of the study which included procedure for data collection, potential risks and benefits that were expected from study results. A copy of the written explanation is presented in Appendix C. Subject willingness to participate in the study was evidenced by signature on Form A (Appendix D).

After written consent was obtained, each participant was given a 3 × 5 index card with a number printed on it and were told to use the assigned number for identification on information sheet, pretest, posttest, and evaluation tool.

Upon completion of information sheet, participants were given the pretest and told to read instructions on the cover sheet and to wait for the investigator to say "start" before opening the test booklet. After 2 minutes all subjects appeared to have completed reading the instructions. The investigator asked if there were any questions. None were raised. The participants were given the direction to start the test and it was stated that there was a 15 minute time limit for the pretest.

After the pretest was completed, the participants viewed the audio-visual media entitled "Biological

Variations" (Concept Media 1977). This viewing took 8 minutes. Then the subjects took the posttest in accordance with the same procedure as stated for the pretest.

Lastly, the participants responded on the evaluation tool by circling yes or no to five questions and making comments in the section provided if so desired.

Treatment of Data

All materials were collected and sorted by the investigator and examined to ascertain that identification numbers were present in all designated places. All instruments were completed appropriately and therefore, all instruments were used in the study.

The pretest and posttest had a possibility of 15 correct responses each. The items were given a numerical value of one. Items covered content presented in the audio-visual media with terminology as stated in the media. It was expected that there would be a significant difference in the scores for the pretest and posttest after treatment with the audio-visual media.

The difference in the raw score of the pretest and posttest was analyzed using the t-test for a small population to measure for significance of difference in

the mean pretest and posttest scores. The 0.05 level of significance was utilized as the standard of significance but the actual level was represented at the 0.001 level.

The information obtained from the "Information Sheet" and "Evaluation Tool" will be explained in the following chapter.

Summary

A preexperimental one group pretest-posttest design was implemented to measure the effectiveness of audio-visual media in teaching assessment of dark skin for color change in the area of cognitive domain. Twenty-four subjects from a vocational nursing program were utilized. Data were collected utilizing an information sheet, pretest, posttest and evaluation tool. The data were analyzed using a t-test for a small population. Chapter 4 contains a complete description of analysis of data.

CHAPTER 4

ANALYSIS OF DATA

A one group pretest-posttest design was implemented to investigate the question: Is modular instruction, utilizing audio-visual media, an effective method of teaching assessment of dark skin for color change? The purposes of the study were threefold: to test the effectiveness of modular instruction, utilizing audio-visual media, in teaching assessment of dark skin for color change; to measure the knowledge gained in the cognitive domain; and to enable participants to view techniques that are effective in diagnosing color change in dark skin.

The sample population consisted of 24 participants. The subjects were asked to participate in the study on a voluntary basis and asked to respond as accurately as possible to the instrument utilized. Raw mean scores of the pretest and posttest were analyzed using a t-test for small populations to determine if there was a significant difference in test results.

The analysis and interpretation of data will be presented in three sections. The first section will

describe the data collected from the "Participant Information Sheet." The next section will focus on the statistical results of the pretest and posttest. The final section will explore the findings of the information gathered from the "Evaluation Tool."

Description of Sample

The sample population consisted of 24 participants: 23 females and 1 male. Twenty-two of the subjects were white, making up 92 percent of the total population. Two of the subjects were Black, making up 8 percent of the sample.

A majority of the population was in the 18 to 32 age range. A mode age range of 18 to 22 was revealed for the group. No median or mean was calculated for this group because range of ages were used to collect data.

Table 1 presents a description of the population according to age range.

Analysis and Interpretation of Pretest-Posttest Data

The raw scores of the pretest revealed a range of 6 to 12 of a possible 15. The mode was 11, with a median of 9 and a mean of 9.375.

Table 1

Description of Population According to Age Range

Age Range	N	Percent
18-22	7	29
23-27	5	20
28-32	6	27
38-42	1	4
43-47	3	12
48+	2	8
	24	100

x_m = 18-22

The raw scores of the posttest revealed a range of 8 to 15 of a possible 15. The mode was 13 and 14 with a median of 13 and a mean of 12.958.

A t-test for small populations was utilized to analyze the differences between the pretest and post-test scores after treatment with the audio-visual media. When data were analyzed by the t-test for a difference in mean it was found to be statistically significant. A comparison of pretest-posttest results are presented in Table 2. As shown in Table 2 there was a significant difference in pretest and posttest scores after the sample was treated with the audio-visual media. Statistical analysis of data allowed for changes within the sample in pretest versus post-test because the one group design was utilized. The hypothesis: modular instruction, utilizing audio-visual media, is an effective method of teaching assessment of dark skin for color change was not rejected.

The findings were consistent with the literature which suggested that modular instruction is an effective method of teaching groups of people with different learning styles and needs. The study results could

Table 2

Comparison of Pretest-Posttest Raw Scores

Pretest (N = 24)		Posttest (N = 24)
$\bar{x}$ = 9.375		$\bar{x}$ = 12.958
x = 9		x = 13
x_m = 11	t = 9.429 df = 23 p < .001	x_m = 13 and 14

have been influenced by the small sample size and the one group pretest-posttest design.

Analysis of the "Evaluation Tool" revealed that for 18 or 82 percent of the subjects, the audio-visual media presented new knowledge and 16 or 73 percent thought they did not have expertise in this area of assessment. For questions one and two, two of the responses had to be discarded because subjects responded both yes and no to each statement. All subjects responded positively that the audio-visual media was clear and concise and that the test questions covered material presented in the media. All felt that this knowledge would assist them in delivering quality patient care. The small sample size and the Hawthorne effect and Halo effect may have influenced results of the "Evaluation Tool." See Table 3 for a summary of responses to the "Evaluation Tool."

Summary of Findings

Analysis of data found a statistically significant difference between pretest and posttest scores after treatment with the audio-visual media. The hypothesis was not rejected--modular instruction, utilizing

Table 3

Summary of Responses to Evaluation Tool

Question	Yes	Percent	No	Percent	N
1	18	82	4	18	22*
2	6	27	16	73	22*
3	24	100	--	--	24
4	24	100	--	--	24
5	24	100	--	--	24

*Two responses discarded because subjects answered both yes and no to questions 1 and 2.

audio-visual media, is an effective method of teaching assessment of dark skin for color change. Study results may have been influenced by small sample population and the one group pretest-posttest design. Findings did agree with the literature on the effectiveness of modular instruction units.

CHAPTER 5

SUMMARY OF THE STUDY

The study answered the question: Is modular instruction, utilizing audio-visual media an effective method of teaching assessment of dark skin for color change? The purposes of the study were threefold: to test the effectiveness of modular instruction utilizing audio-visual in teaching assessment of dark skin for color change, to measure the amount of knowledge gained in the cognitive domain, and to enable participants to view techniques which are effective in diagnosing color change in dark skin.

This chapter will be divided into four sections and will present discussions of the summary, findings, conclusions and implications, and recommendations for further study.

Summary

A preexperimental one group pretest-posttest design was implemented to investigate the effectiveness of modular instruction, utilizing audio-visual media, in teaching assessment of dark skin for color change.

The tool utilized for measurement was a 15 question, 4 factor, objective test designed by the investigator.

Review of the literature revealed a need for nursing practitioners to have knowledge in the area of assessment of dark skin for color change. It was found that specific clinical signs such as pallor, cyanosis, jaundice and erythema were not being observed and noted by care givers in persons of color. In addition to this, scant resource material was found which would assist practitioners in achieving skill in this area of skin assessment.

An audio-visual media has been marketed which includes a section on assessment of dark skin. Therefore, this study was undertaken to investigate the effectiveness of this media by measurement of knowledge gained in the cognitive domain.

The sample population consisted of 24 Level III vocational nursing students. Participation in the study was on a voluntary basis. Measurement of knowledge gained after viewing the audio-visual media was calculated by the difference in the raw scores of the pretest and posttest. A t-test for small populations was used to analyze the data and a statistically

significant difference was found. The hypothesis was not rejected--modular instruction, utilizing audio-visual media is an effective method of teaching assessment of dark skin for color change.

Discussion of Findings

The findings of this study revealed that nursing students with a basic knowledge of anatomy and physiology, medical terminology, and some clinical experience can acquire knowledge through use of audio-visual media in assessment of dark skin for color change. It was also found that more research is needed to ascertain whether this type of knowledge will significantly improve patient care. Also, audio-visual media needs to be developed and researched that will represent the best methodologies that are most accurate in teaching this type of content.

Conclusions and Implications

The following conclusions were derived from the study:

1. Treatment with the audio-visual media produced a significant difference in pretest-posttest results.

2. The sample thought that the quality of patient care would be improved with acquisition of knowledge of assessment of dark skin.
3. The sample population was positive toward acquiring skills in this area of assessment.
4. The results of this study cannot be generalized to populations other than this sample population.

As a result of this study, several implications for nursing were suggested:

1. Schools of nursing should incorporate techniques of assessment of dark skin systematically in the curriculum.
2. Failure to recognize changes in color of dark skin places patients at risk.
3. Schools of nursing are not preparing practitioners to care for a culturally diverse patient population.
4. More resource materials are needed with development of audio-visual media specific to assessment techniques of dark skin.

Recommendations

The recommendations that resulted from the study are as follows:

1. Similar investigation should be conducted utilizing a larger sample population to validate the findings of significant difference in pretest-posttest results.
2. A true experimental design using control and experimental groups should be researched.
3. A longitudinal study should be implemented to ascertain if a significant difference in test results remain after a time lapse.
4. Different levels of nurses and nursing students should be utilized in a sample population to test modular effectiveness in this area of assessment.
5. Further research should be conducted to measure the amount of knowledge gained in the cognitive and pyschomotor domains.
6. Media using varied methodologies should be developed and researched as related to this content.

APPENDIX A

HUMAN RESEARCH REVIEW COMMITTEE APPROVAL

TEXAS WOMAN'S UNIVERSITY
Box 23717, TWU Station
Denton, Texas 76204

1810 Inwood Road
Dallas Inwood Campus

HUMAN SUBJECTS REVIEW COMMITTEE

Name of Investigator: Carson Easley Center: Dallas

Address: 1315 Broadmoor Date: June 3, 1982

Austin, Texas 78723

Dear Ms. Easley:

Your study entitled The Effectiveness of Audio-Visual Media As A Method of Teaching Assessment of Dark Skin For Color Change has been reviewed by a committee of the Human Subjects Review Committee and it appears to meet our requirements in regard to protection of the individual's rights.

Please be reminded that both the University and the Department of Health, Education, and Welfare regulations typically require that signatures indicating informed consent be obtained from all human subjects in your studies. These are to be filed with the Human Subjects Review Committee. Any exception to this requirement is noted below. Furthermore, according to DHEW regulations, another review by the Committee is required if your project changes.

Any special provisions pertaining to your study are noted below:

____ Add to informed consent form: No medical service or compensation is provided to subjects by the University as a result of injury from participation in research.

____ Add to informed consent form: I UNDERSTAND THAT THE RETURN OF MY QUESTIONNAIRE CONSTITUTES MY INFORMED CONSENT TO ACT AS A SUBJECT IN THIS RESEARCH.

____ The filing of signatures of subjects with the Human Subjects Review Committee is not required.

____ Other:

XX No special provisions apply.

Sincerely,

Dissertation/Theses signature page is here.

To protect individuals we have covered their signatures.

APPENDIX B

AGENCY PERMISSION FOR CONDUCTING STUDY

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING
DENTON, TEXAS

DALLAS CENTER
1810 Inwood Road
Dallas, Texas 75235

HOUSTON CENTER
1130 M.D. Anderson Blvd.
Houston, Texas 77025

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE Austin Community College School of Vocational Nursing

GRANTS TO Carson Easley

a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

The Effectiveness of Audio-Visual Media as a Method of Teaching Assessment of Dark Skin for Color Change

The conditions mutually agreed upon are as follows:

1. The agency (may) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (may not) be identified in the final report.
3. The agency (wants) (does not want) a conference with the student when the report is completed.
4. The agency is (willing) (unwilling) to allow the completed report to be circulated through interlibrary loan.
5. Other: _____

Dissertation/Theses signature page is here.

To protect individuals we have covered their signatures.

APPENDIX C

SUBJECT WRITTEN CONSENT FORM

Consent Form
TEXAS WOMAN'S UNIVERSITY
HUMAN RESEARCH REVIEW COMMITTEE

(Form A -- Written presentation to subject)

Consent to Act as a Subject for Research and Investigation:

(The following information is to be read to or read by the subject):

1. I hereby authorize Carson Easley
(Name of person(s) who will perform procedure(s) or investigation(s)

to perform the following procedure(s) or investigation(s): (Describe in detail)

a. Obtain a brief biographical sketch that includes, age, sex and ethnic origins which are to be given on a voluntary basis.

b. Administer a pre-test of 15 objective test questions concerning material which is to be later presented in an audio-visual media. The test has a 15 minute time limit.

c. To present a 5-8 minute filmstrip and cassette tape which gives information and techniques regarding assessment for color change in dark skin.

d. To administer a post-test of 15 objective test questions covering material presented in the audio-visual media. The test has a 15 minute time limit.

e. Obtain information through use of an evaluation tool which is to be answered after the completion of the investigation.

2. The procedure or investigation listed in Paragraph 1 has been explained to me by _____.
(Name)

3. (a) I understand that the procedures or investigations described in Paragraph 1 involve the following possible risks or discomforts: (Describe in detail)

Possible anxiety related to sensitivity to test taking and minimal stress due to the designated time limit of the pre-test and post-test.

(Form A - Continuation)

3. (b) I understand that the procedures and investigations described in Paragraph 1 have the following potential benefits to myself and/or others:

To assist health care givers in achieving skill in methods of assessing color change in dark-skinned patients. Cyanosis, pallor and jaundice are manifestations which can go undetected in persons of dark skin if the health care givers are untrained or unfamiliar with methods of assessing dark skin for color change. Also to define methodologies which are best for presenting this type of information.

4. An offer to answer all of my questions regarding the study has been made. If alternative procedures are more advantageous to me, they have been explained. I understand that I may terminate my participation in the study at any time.

_____ _____

Subject's Signature Date

(If the subject is a minor, or otherwise unable to sign, complete the following):

Subject is a minor (age ____), or is unable to sign because:

Signatures (one required)

_____ _____

Father Date

_____ _____

Mother Date

_____ _____

Guardian Date

APPENDIX D

INSTRUMENT

PARTICIPANT INFORMATION SHEET

Assigned Participant Number: _____

Please Circle One:

Age 18-22

23-27

28-32

33-37

38-42

43-47

48 and over

Sex Male Female

Ethnic Origins

Caucasian

Black

Hispanic

Other _____ (please state)

PRETEST
POSTTEST

Please read the following instructions carefully before beginning the test.

1. Place participant identification number on the answer sheet. Please do not place your name on the answer sheet or the test booklet.

2. You may mark on the test but place all answers on the answer sheet provided.

3. Please circle only one answer for each question.

4. If you do not know an answer you may leave the question blank.

5. Please do not ask questions while the test is in progress.

*When the investigator says "start," you have fifteen (15) minutes to complete this test.

1. The darker the person's skin:

   a. the easier it is to assess skin for color change
   b. the more likely the person is to have a serious disease process
   c. the more difficult it is to assess change in skin color
   d. makes no difference in assessment of disease processes

2. The best light in which to assess skin for changes in color is:

   a. 40 watt light bulb held close to the skin
   b. any light as long as it is over 40 watts
   c. flourescent light
   d. day light

3. In establishing baseline color, it is helpful to observe those skin surfaces having the least amount of pigmentation. These areas included:

   a. the scalp and nailbeds
   b. the lips, oral mucosa and nasal passages
   c. conjunctiva, sclera and bucal mucosa
   d. volar surface of the forearm, the palms of hands, soles of feet, the abdomen and buttocks

4. When underlying red-tones are missing from the skin color, it usually indicates:

   a. pallor
   b. jaundice
   c. cyanosis
   d. erythema

5. Subtle changes in color may first be noticed in the following areas:

   a. scalp and hairline
   b. mouth, conjunctiva and nailbeds
   c. nailbeds, scalp and palms of hands
   d. any area which has least pigmentation

6. Oral hyperpigmentation, which can occur on the tongue as well as the mucosa, is a condition that alters the value of the oral mucosa as a site for observation. At what percentage does this occur in Blacks?

   a. 10 to 50 percent
   b. 50 to 90 percent
   c. less than 25 percent
   d. 100 percent of the time

7. The lips may be helpful in assessing skin color changes such as:

   a. cyanosis and jaundice
   b. erythematous rash
   c. jaundice and erythema
   d. all of the above

8. It is important to have established a baseline color when using the lips as an area of assessment for cyanosis because:

   a. the lips are very unreliable when performing an assessment
   b. the lips may be the last area to change color
   c. the lips of some Black people have a natural bluish hue
   d. the lips of some Blacks are always pale and never change color

9. The conjunctiva will reflect color changes in such conditions as:

   a. cyanosis and jaundice
   b. pallor and jaundice
   c. only jaundice
   d. pallor, cyanosis and petechiae

10. The sclera and the hard palate are good areas to detect:

   a. jaundice
   b. pallor
   c. petechiae
   d. cyanosis

11. The sclera of dark-skinned people often have sub-conjunctival fatty deposits which produce:

    a. a pale coloration
    b. a red coloration
    c. a yellow coloration
    d. no change in coloration

12. Melanin deposits or freckles may be found:

    a. on the sclera of a highly pigmented person
    b. on the lips of a highly pigmented person
    c. on the eyelids of a highly pigmented person
    d. on the conjunctiva of a highly pigmented person

13. Nailbeds may be useful in detecting:

    a. petechiae
    b. jaundice and pallor
    c. cyanosis and petechie
    d. cyanosis and pallor

14. In some dark-skinned persons, the nailbeds may be:

    a. highly pigmented and thick
    b. lined or contain melanin deposits
    c. too brittle and easily broken
    d. a and b only

15. In some dark-skinned people rashes, inflammation, and ecchymosis may only be detected by:

    a. visualization
    b. palpation
    c. heat emissions
    d. percussion

EVALUATION TOOL

Participant identification number: _____

Please circle the response that is most accurate.

1. Information presented is new knowledge to participant.

   YES NO

2. Participant has previously acquired skill in this area of assessment.

   YES NO

3. Information presented in clear and concise manner in audio-visual media.

   YES NO

4. Test questions covered material presented in audio-visual media.

   YES NO

5. Material presented will assist me in delivering quality patient care.

   YES NO

Comments:

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