A STUDY OF ORAL HYGIENE STATUS IN PATIENTS EXPOSED TO SPECIFIED ORAL STRESSORS

by

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CHAPTER I

INTRODUCTION

Health is the most fundamental of all human needs. Personal cleanliness and hygiene are essential daily living habits for maintaining health. Oral hygiene is a part of personal cleanliness and hygiene.

Reportedly 75% of all adult patients have dental problems upon admission to the hospital (McPhetridge, 1973). Hospitalized patients are at risk for developing further oral problems and oral discomforts because they are exposed to certain stressors during their hospital stay. These stressors include: 1) certain medications e.g. Dilantin and Tetracycline (Bergensen, 1973); 2) chemotherapy (Beck, 1979); 3) certain systemic diseases e.g. Leukemia and Addison's Disease (Bodey, 1971; Shafer, 1974); and 4) mouth breathing, oral suctioning, continuous nasal oxygen therapy, and nothing by mouth status (DeWalt and Haines, 1969).

DeWalt and Haines (1969) have suggested that one way to effectively deal with these stressors is for nurses to provide oral hygiene nursing care. Clinical nursing journals and textbooks cite the importance of oral hygiene measures and oral comfort in the total care of hospitalized patients (Lovelock, 1973; Block, 1976). Nurses are responsible for the maintenance and improvement of the oral hygiene status and oral comfort for the hospitalized patients assigned to

their care. Thus, nurses should assess the patient's oral hygiene status to determine the need for oral hygiene nursing care.

This study will address the nursing assessment of the oral hygiene status of hospitalized patients who have been subjected to the specified oral stressors of continuous oxygen therapy and nothing by mouth status (henceforth referred to as NPO). This study enlarges on DeWalt and Haines' (1969) study by: 1) adding an updated, comprehensive review of the literature; 2) using a larger sample of subjects; 3) separating out the oral stressors into individual categories; and 4) adding the numerical measurements of subjective perceptions of oral hygiene status and oral comfort.

Review of the Literature

Consistent with the concerns of the study, the review of the literature examined the following: 1) the concept of how oral health is maintained, 2) the stressors to oral health, 3) the assessment of oral hygiene status, and 4) the concept of oral comfort.

Maintenance of Oral Health

Oral health is maintained primarily by the movement of the tongue, lips, and cheeks during speech, chewing, and swallowing, due to the natural detergent action of foods and

saliva, and also by cleaning by an artificial means. The movement of the jaws, together with the flow of saliva, clean the teeth by removing food particles and by decreasing the acidity of the mouth (Dyer, 1976; Maurer, 1977). The additional mechanical removal of soft tooth debris is especially important to persons in the United States as the average American diet is "soft" and clings to teeth and oral tissues rather than cleansing or stimulating them (Maurer, 1977). This dietary pattern is also true for the hospitalized patient. The ultimate aim of oral hygiene nursing care in the dentulous person is to prevent dental caries by removing debris. Additional measures are also needed to stimulate the gingivae, to keep the oral mucosa soft and moist, to prevent halitosis, and to leave the mouth refreshed (Van-Drimmelen & Rollins, 1969; Maurer, 1977). The agents, techniques, and frequency of this additional mechanical cleansing are therefore important components of oral health.

Nursing studies reported in the literature to date (see Summary - Table I) have stated that it is the process of giving oral care rather than one particular agent that most influences the condition of the mouth. The process and frequency of oral hygiene nursing care must be individualized and based upon assessment of the patient's oral cavity. No significant differences (see Table I) between agents or techniques of application have been reported (Ginsberg, 1961; Ginsberg & Yoder, 1964; Passos & Brand, 1966; VanDrimmelen

TABLE I
SUMMARY OF RELATED NURSING STUDIES

AUTHOR, YEAR	DEPENDENT VARIABLE	MEASUREMENT OF D. V.	INDEPENDENT VARIABLE	TESTING PHASE	RESULTS
Ginsberg, 1961 (N=11)	Oral hygiene status	1. Evaluation tool -cleanliness of oral cavity -ease of use -patient comfort 2. Presence of uremic stomatitis 3. Color photography	1. Various combinations of oral agents 2. Frequency of care	Not reported	1. All procedures effective in preventing oral complications. 2. Patients benefited most from procedures that met their individual needs at specific times. 3. Omission of oral care over a 2 to 6 hr. period nullified benefits of previous care.
Passos & Brand, 1966 (N=66)	Effectiveness of oral agents	1. Assessment tool -saliva -tongue -palates -membranes, gums -teeth -odor -lips	1. 3 oral agents -milk of magnesia -mouthwash -hydrogen peroxide 2. Technique of application	2-10 day range	1. No statistical significant difference in the effectiveness of the 3 agents.
Van Drimmelen & Rollins, 1969 (N=136)	Oral hygiene status	Oral Assessment Guide -Moisture and Coating of: -palates -tongue -membranes -lips -gingiva -teeth -odor	Oral Agent: 1:1 lemon juice/glycerine (experimental) Normal saline (control agent)	20 days	1. 1:1 lemon juice/glycerine tends to dry oral tissues. 2. Oral hygiene status improved regardless of agent used. 3. Greatest improvement came after the first day of R_x.

TABLE I
SUMMARY OF RELATED NURSING STUDIES
(continued)

AUTHOR, YEAR	DEPENDENT VARIABLE	MEASUREMENT OF D. V.	INDEPENDENT VARIABLE	TESTING PHASE	RESULTS
Klocke & Sudduth, 1969 (N=62)	Plaque information	Kobayashi-Ash Plaque Scoring	Instruction of toothbrushing technique	4 days	1. Instruction in correct toothbrushing method the most effective variable in reducing plaque scores.
DeWalt & Haines, 1969 (N=1)	Oral hygiene status	Observational tool -oral mucosa -tongue -lips -teeth -voice -saliva Tape recorder Disclosing solution	Stressors: -oral breathing -continuous O_2 -intermittent suctioning -NPO status	5 hrs.	1. These stressors can damage oral mucosa. 2. Nursing intervention can minimize these damaging effects.
Wiley, 1969 (N=15)	Oral hygiene status	pH Hydrion paper	Oral agents -11 combinations of lemon juice, glycerol, and distilled H_2O	12 weeks	1. Did not find a definitive answer-pH of oral cavity was more. 2. Acidic after R_x.
DeWalt, 1975 (N=48)	Oral hygiene status	Assessment tool -salivation -tongue moisture -tongue coloring -palates -gingival tissue -membranes -lip texture -lip moisture -soft tooth debris	Toothbrush vs. toothette Time intervals (2, 3, or 4 hrs.)	8 hrs. daily for 10 days	1. Oral care at 4 hr. intervals most effective in improving salivation, tongue moisture & color, palate moisture, lip texture & moisture, and condition of membranes. 2. Oral care needs must be determined by individualized assessments. 3. Oral tissue of geriatric patients responds best to toothette.

(continued)

TABLE I
SUMMARY OF RELATED NURSING STUDIES
(continued)

AUTHOR, YEAR	DEPENDENT VARIABLE	MEASUREMENT OF D. V.	INDEPENDENT VARIABLE	TESTING PHASE	RESULTS
DeWalt, 1975 (N=48)					4. Responses of oral tissue to oral care are not accumulative over time.
Beck, 1979 (N=47)	Oral hygiene status	1. Oral Exam Guide -Texture, Color & Moisture of: -lips -tongue -mucous membranes -gingiva -teeth -saliva -voice -ability to swallow 2. pH of saliva - Nitrazine paper 3. Oral Perception Guide -Same categories as Oral Exam Guide (see #1)	Systematic protocol of oral care	25 days each group	1. Level of infection decreased using protocol. 2. Patient perceptions did not change after using protocol. 3. Physical condition of mouth improved after using protocol.

& Rollins, 1969; Wiley, 1969; DeWalt, 1975) except for brushing the teeth with a soft, end-rounded bristle brush with a flat brushing surface and tufts of equal length to effectively remove plaque (Klocke & Sudduth, 1969; Reitz & Pope, 1973; Dean, 1976; American Dental Association, 1978).

Stressors to Oral Health

DeWalt and Haines (1969) studied the effects of specified stressors on healthy oral mucosa. The experimenters while caring for critically ill patients observed local changes occurring in the oral mucosa which appeared to be a result of certain stressors which they identified as oral breathing, continuous flow of oxygen, and intermittent mechanical suction. Therefore, the purposes of their study were: 1) to observe and describe the effects of the stressors on the oral mucosa, tongue, lips, teeth, and voice; and 2) to observe the effect of oral hygiene on these structures after subjecting them to the stressors.

The study by DeWalt and Haines (1969) was conducted with one healthy subject in a laboratory setting. The subject maintained a semi-recumbent position, lying in bed with her head and shoulders propped up on pillows for the entire experiment which extended over a five-hour period. In order to permit a good view of the oral cavity the head was tilted backward. A nasal catheter was inserted and continuous

oxygen given. The mouth was kept open and mechanical suctioning carried out intermittently. The subject received nothing by mouth during the first four hours. Observations were made and recorded by the investigator at 15-minute intervals over a five-hour period. A tape recording of comments made by the subject was made following each of the visual observations. Tooth debris was determined by the use of a disclosing solution.

DeWalt and Haines (1969) reported that damaging effects, e.g. dryness of tissues, were visible within 45 minutes of application of these four stressors. By the conclusion of the experimental phase four hours later, the following visible changes were observed: 1) the tongue had become coated to within two inches of its base; 2) the tongue tip was bright red and inflamed; 3) the tongue had numerous dry identations; 4) the oral mucosa was dry and pale with numerous pinpoint brown spots on the roof of the mouth; 5) the saliva became thick, mucoid, and flow decreased; 6) the lips were red, inflamed, and dry with open cracks and blisters; 7) the teeth were dry and dull with increased soft debris; and 8) the sense of taste was lost and the voice deepened.

The subject reported discomforts related to the oral cavity again within 45 minutes of application of stressors. These discomforts became intense and by the end of the fourth hour were reported as: 1) a burning, thick, numb, dry tongue; 2) a dry, coated, numb oral mucosa; 3) cracked,

dry, burning lips; 4) coated teeth; and, 5) an inability to distinguish tastes as well as difficulty talking. (DeWalt & Haines, 1969)

Oral hygiene, which consisted of brushing the teeth with a dentifrice, followed by the application of lemon and glycerine, was given by the investigator twice during the last, or fifth, hour of the experiment without discontinuing the stressors. DeWalt and Haines (1969) reported that this nursing intervention of oral care visibly minimized the effects of the stressors under study. The fact that one of the oral agents used, the lemon and glycerine swab, has since been reported to dry oral tissues (VanDrimmelen & Rollins, 1969; Wiley, 1969) offers support to the conclusion that it is the process of giving oral care rather than the specific agent used that improves the condition of the mouth.

Further studies are needed concerning the concept of oral stressors. Although DeWalt and Haines (1969) described in detail the effects of these four stressors on oral tissues, their sample was only one, healthy subject who was: 1) submitted to all four stressors simultaneously and 2) a professional nurse highly sensitive to the fact that these stressors would produce changes. No statistical evidence for their conclusions were offered and no attempt was made to categorize or explore the subject's perceptions of oral hygiene status or comfort.

Another identified stressor to oral health is certain medications including chemotherapy (Beck, 1979). Reserpine, Atropine, Belladonna, Scopolamine, and Dilantin specifically and their classifications in general (e.g. antihistamines, tranquilizers, anticoagulants, and antibiotics) can directly stress oral tissues (Bergensen, 1973; Burrell & Burrell, 1977; Mitchell, 1978). One of the most potent types of medications to act as stressors are the chemotherapeutic drugs. These drugs are known to produce a painful stomatitis. (Bruya & Madeira, 1975; Beck, 1979)

Beck (1979) investigated the effect of a systematic protocol for oral care on the development of stomatitis in patients receiving chemotherapy. Using an oral exam guide with a four-point rating scale for each item, 114 evaluations of physical condition, oral condition and oral perceptions were done on a control group of 25 patients every other day for 25 days. A protocol for oral care utilizing a toothbrush and either a mixture of equal parts water, Cepacol,[R] and hydrogen peroxide or toothpaste of choice was then instituted and 103 evaluations were done on 22 experimental patients.

The protocol for oral care was implemented based upon two daily assessments of the subject's oral status. Regimes differed depending upon the degree of stomatitis present following chemotherapy. For all patients receiving chemotherapy, the following care was given before and after

meals and at bedtime: 1) toothbrushing with a soft brush and toothpaste of choice, 2) rinsing with Cepacol mouthwash, and 3) placing vaseline on the lips.

If mild stomatitis developed, the following protocol was implemented: 1) culture of the oral cavity, 2) CBC and differential obtained, 3) placed on a bland diet, 4) frequency of oral hygiene increased to every two hours using a soft brush and equal parts of Cepacol^{R} - hydrogen peroxide - water and 5) topical antibiotics, analgesics, and topical anesthetics administered as needed. In cases of severe stomatitis, the protocol called for oral hygiene to be given every hour; otherwise, the protocol was identical to that for mild stomatitis.

Beck (1979) reported the following results: 1) no one developed as severe a mouth reaction when the oral care protocol was implemented; 2) under physical condition, level of consciousness and self-care ability have the greatest impact on the condition of the mouth; 3) patients' perceptions of their mouths were not significantly different when the oral care protocol was used ($t=1.29$); and 4) there was a significant ($t=3.85$) decrease in the mean oral exam score following the use of the oral care protocol. Unfortunately, in Beck's study the oral care was administered by a large number of health care team members and was known to be so inconsistent in both method and frequency that the oral care in the control group was not even measured. Furthermore, in

both the control and experimental groups, feedback to the investigator indicated that more oral care was done than was actually documented. Further studies are indicated as Beck reported a strong correlation between the subject's perception of oral status and a visual oral exam ($r=.57$) yet found no significant difference ($t=1.29$) in the oral perception scores before and after the implementation of the oral care protocol. Additionally, investigator bias may have been a factor as Beck collected the subjective comfort data first.

Assessment

Studies reported in the literature state that it is the process of giving oral hygiene nursing care based upon individual patient assessment rather than the specific agent which influences the general condition of the mouth (Ginsberg, 1961; Passos & Brand, 1966; VanDrimmelen & Rollins, 1969; DeWalt, 1975; Beck, 1979). In these studies the researchers utilized oral assessment guides to aid in a systematic inspection of the oral cavity. (See Summary in Table I) They concluded that the components of an oral assessment should include: 1) the condition of the oral mucosa for moistness, color, and lesions, 2) the color, texture, and moisture of the lips and the tongue, 3) the amount of saliva, 4) the amount of soft debris on the teeth, 5) the ability to swallow, 6) the gingiva's color and moisture, 7) the palates' color and moisture, and 8) quality of voice. (Passos & Brand, 1966; Ross, 1967; VanDrimmelen & Rollins, 1969; DeWalt & Haines,

1969; Wilkins, 1971; Bruya & Madeira, 1975; DeWalt, 1975; Rosenhouse, 1976; Beck, 1979)

In 1961, Ginsberg studied 11 patients with acute renal failure. The purpose of her study was to identify the principles underlying the oral hygiene nursing care given to patients for the prevention or alleviation of stomatitis. Following initial oral examinations, subjects were given care based on individual need with a wide variety of oral agents. The frequency ranged from one hour to four hours in a 24-hour period. After 1½ years of study, Ginsberg reported that all agents and procedures were effective in preventing oral complications in patients with acute renal failure. The study did not show that certain types of equipment or procedures are preferrable to others. Rather, patients benefited most from procedures that met their needs at specific times and which could be and were altered as the condition of the patients changed. Although the author offers no statistical supports, her reported results are quoted by Passos and Brand (1966), VanDrimmelen & Rollins (1969), DeWalt and Haines (1975), and Beck (1979).

In 1966, Passos and Brand specifically compared their results with Ginsberg's findings. Their study on 66 acutely ill post-operative patients compared the effectiveness of three oral agents: milk of magnesia, mouthwash, and hydrogen peroxide. After standardizing the frequency of treatment and the technique of application, they cited no statistical

significance between the effectiveness of the three oral agents.

In 1969, VanDrimmelen and Rollins evaluated the effectiveness of lemon juice and glycerine as an oral hygiene agent in the proportion of 1:1. In a sample of 136 nursing home patients using normal saline as the control agent with duration and technique of application standardized, their findings substantiated their hypothesis that the agent, lemon juice and glycerine in the proportion of 1:1, tends to dry oral tissues. These findings were corroborated by Wiley in 1969 on a sample of 15 college students. VanDrimmelen and Rollins (1969) further reported that the general condition of the mouth improved regardless of agent used; this corroborates the reported findings of Ginsberg (1961) and Passos & Brand (1966).

In 1975, DeWalt published results that again substantiated that nursing intervention, based upon individualized assessments, can produce positive, significant, and observable changes in the patient's oral tissues. DeWalt's findings also substantiated that responses of oral tissue to oral care are not cumulative over time. DeWalt studied 48 institutionalized geriatric patients and reported that changes occurring in seven of the nine dependent variables (salivation, tongue moisture, tongue color, moisture of the palates, condition of the membranes, lip texture, and lip moisture) were greater at the end of one day than at the end

of ten days; six of those changes were statistically significant ($p < .05$). Additionally, Ginsberg's (1961) findings that past benefits of care are nullified if oral care is omitted over an extended period - two to six hours - were corroborated.

Nursing texts and relevant research studies cite the importance of systematic, thorough oral inspections in assessing the need for oral hygiene nursing care. To date, it has been well documented that this assessment and the subsequent process of giving oral care are vital components of oral health (Ginsberg, 1961; Passos & Brand, 1966; Van-Drimmelen & Rollins, 1969; DeWalt, 1975). What has not been studied is the reliability of subjective patient perceptions concerning oral discomforts and their contributions to a total oral cavity assessment. We are left to wonder if oral discomforts are an accurate predictor of oral hygiene status in hospitalized patients.

Oral Comfort

According to nursing texts, hygiene and comfort are nursing responsibilities. Cleanliness and comfort are deemed essential to an individual's health and well-being. Yet a study conducted by White (1972) revealed that patients were more concerned than were their nurses about their needs for physical care and comfort. White (1972) also reported: 1) that nurses had greater concern than did their patients for satisfying psychosocial aspects of care, 2) that both nurses

and patients agreed on the importance of the nurse carrying out the doctor's orders, and 3) that both nurses and their patients found preparation for discharge of relatively little importance. Assistance with oral hygiene nursing care was highly ranked in importance by patients (mean score 2.86, rank order 13th in a list of 50 items) but not by their nurses (White, 1972).

Only two of the relevant nursing studies reported in the literature studied oral comfort in any way. DeWalt and Haines (1969) kept a taped record of the subject's comments at 15-minute intervals during the five hour testing phase. No attempt was made to classify this data numerically and thus no statistical descriptions were offered. In Beck's (1979) study of oral care in a population receiving chemotherapy, an Oral Perception Guide was used to try to quantify the subject's perceptions of oral hygiene status. Beck did not control for any additional stressors, and subjectively felt that perceptions of oral comfort were not an accurate predictor of oral hygiene status. No oral hygiene nursing care study to date has attempted to measure both subjective and objective data for a complete oral assessment with subjects grouped because of oral stressor present.

Summary

The general topic of oral health has been examined from four separate angles: 1) the factors which maintain oral health; 2) the stressors to oral health; 3) assessment of

oral hygiene status by hospital nurses; and 4) the patient's perception of oral comfort. The literature review states that it is the process of giving oral care rather than individual agents or techniques that most influences the condition of the mouth. Most authors recommend that oral hygiene nursing care be provided more frequently to hospital patients who are acutely ill and exposed to injury, trauma or specified oral stressors. The process and frequency of oral hygiene nursing care must be individualized and based upon assessment of the patient's oral cavity. Various attempts have been made by nursing researchers to develop a tool for nurses to use in their assessments of the oral cavity. Both subjective (patient perceptions) and objective (visual exam) guides have been developed to assist in such assessments.

Only one nursing study reported in the literature to date has attempted to measure both subjective and objective data for a more complete oral assessment of hospitalized patients (Beck, 1979). Although Beck reported a strong correlation between oral exam scores and oral perception scores ($r=.57$, $p=.05$), further studies are needed. In Beck's study (1979), the sample subjects were exposed to many oral stressors simultaneously (e.g. chemotherapeutic drugs, oral infections, cancer disease process), and some had already developed a painful stomatitis. Beck (1979) did not control for any superimposed oral stressors, such as the commonly

prescribed medical regimen of oxygen therapy and NPO status. No study reported to date in the literature has attempted to measure oral hygiene status with both subjective and objective data for those hospitalized patients exposed to specified oral stressors. Therefore, this study addressed the assessment of oral hygiene status of hospitalized patients exposed to specified oral stressors.

Purpose of the Study

The purpose of this study was to determine under conditions of specified stress to the oral cavity what relationship exists between the patient's perceptions of oral hygiene status and comfort, and a visual examination of the patient's oral hygiene status.

Hypothesis

There will be no correlation between the patient's perception of oral status and comfort as measured by an Oral Perception Guide and the visual examination of the patient's oral status as measured by an Oral Assessment Tool.

CHAPTER II

METHODS

Setting and Subjects

A sample of 100 subjects was selected from a population of hospitalized patients at a private 540-bed urban acute care facility. The sample was drawn from four of the hospital's units; two general medical units and two general surgical units were used. Each unit consists of 20 beds located in 16 private rooms and 2 semi-private rooms. Each unit is staffed primarily by registered nurses functioning in a primary care system of health care delivery. The hospital offers a full range of services including maternity, orthopedic, medical, surgical, neurological, and pediatric services as well as intensive care for coronary, burn, or dialysis patients, and a general medical-surgical intensive care unit. All the rooms on the units for study were air-conditioned and temperature controlled. Data was collected in this setting from January 7 to February 28, 1980.

Subjects were screened for inclusion in the study according to the following general criteria:

1. Express a willingness to participate in the study
2. Be admitted to one of the four units selected for the study during the time available for the study

3. Have consent of primary physician for participation in study
4. Be at least 18 years of age
5. Have at least four permanent teeth
6. Be available for a total survey time of 15 minutes to allow for interview and oral inspection
7. Can speak, write, and understand the English language
8. Did not meet criteria for exclusion

Subjects were excluded if their medical diagnosis was and/or medical regime included oral tumors, head and neck irradiation, jaw or mouth surgery, or chemotherapy.

Data Collection Instruments

Each subject's oral hygiene status was measured in the following two ways: 1) an observational assessment tool developed by Bruya and Madeira (1975) was utilized for visual oral status assessments (see Appendix B) and 2) the Beck (1979) Oral Perception Guide (see Appendix A) was utilized to obtain the patient's perception of their mouth condition and mouth comfort.

The Bruya-Madeira Guide for Assessment of the Mouth was adapted from the work of Passos & Brand (1966), VanDrimmelen & Rollins (1969), and DeWalt (1975). This assessment tool provides for a numerical and descriptive rating of selected identified variables in each subject's physical status and oral status. The tool consists of 12 items measuring oral hygiene status and five items measuring physical status.

The tool utilizes a numerical rating of 1, 2, or 3 for each item within a pre-determined category with one representing normal and three representing the highest deviation from normal. A total score of 36 would represent the highest possible deviation from a normal total oral status score of 12. The range for physical status would be from 15, representing the highest deviation from normal, to a normal score of 5.

Variables to be assessed within the oral cavity include the lips and the tongue (for texture, color, and moisture), the gingival tissue, the teeth, saliva, mucous membranes of the palate, uvula, and tonsillar fossa, as well as taste and voice.

This assessment tool was drawn in part from the work of Passos & Brand (1966); their tool was entitled the "Guide for Numerical Rating of the Condition of the Mouth". Subjects were assigned the numerical equivalent of the description given in each of eight categories. The eight categories observed were saliva, tongue, palates, membranes and gums, teeth, odor, lips, and nares. Although Passos & Brand (1966) offer no evidence of reliability or validity, their tool has been the basis for all assessment tools henceforth published in the nursing literature.

Utilizing adaptations of the Passos & Brand (1966) tool, VanDrimmelen and Rollins in 1969 and DeWalt in 1975 obtained interrater reliability of .96 and .92 respectively. Although the reliability of the Bruya-Madeira tool

has not been tested, the design of this oral assessment tool is to more specifically address each of the variables within the oral cavity. An additional benefit is the ease of use. The tool offers the potential for collecting data on oral cavity status as well as the major factors in the patient's physical status that influence the mouth utilizing the same numerical rating system.

The Beck Oral Perception Guide (see Appendix A) was developed by Beck and reported in her study of the effects of an oral care protocol upon stomatitis in cancer patients receiving chemotherapy. Published in 1979, use of this tool has not been reported outside of Beck's study.

This perception guide is a subjective tool for the numerical and descriptive rating of the identified variables in each subject's mouth. The Beck (1979) tool consists of nine items. Beck utilized a numerical rating of 1, 2, 3, or 4 for each item within a pre-determined category with one representing normal and four representing the highest deviation from normal. A total score of 36 would represent the highest possible deviation from a normal total oral perception score of 9.

The variables to be compared with the subject's own perceptions are the lips, tongue, gingiva, saliva, teeth, dentures, taste,voice, and eating or chewing discomforts. The focus of this tool is on the individual's perception of comfort. This tool provides for the quantification of the

patient's perceptions or subjective data by a numerical rating system. Such quantification facilitates further statistical manipulation. Beck (1979) did not report an interrater reliability score for this tool but did report statistically strong relationships with other variables of interest such as oral exam scores ($r=.57$, $p < 0.05$).

As reported in the literature review a variety of factors may influence oral hygiene status. Factors not under study were controlled by excluding patients with pathology known to alter oral hygiene status or having had jaw or mouth surgery or irradiation. Data was collected on those factors of special interest to this study including:

1. Prior dental history
    a. regularity of dental care (times yearly)
    b. year of last dental visit
    c. purpose of last dental visit
    d. agent used for oral hygiene
    e. regularity of oral hygiene prior to hospitalization (times daily)
    f. number of teeth
    g. presence/absence of dentures
2. Hospital dental care
    a. length of time since last oral care
    b. agent used for oral hygiene
    c. regularity of oral hygiene (times daily)
3. Current medical treatment which may affect oral health
    a. medications (except chemotherapy)

b. continuous oxygen therapy

c. NPO status

d. both NPO and oxygen stressors present

Factors which may affect oral hygiene status during hospitalization:

1. Physical status measured with the Bruya-Madeira tool

2. Oral status measured with the Bruya-Madeira tool

3. Oral perceptions measured with the Beck tool

Demographic data such as the subject's age, sex, occupation, and education were collected. The subject's anonymity was assured by assigning him or her a code number (see Appendix C).

Procedures

Each morning available for data collection the investigator went to the sample stations. The Head Nurse furnished a list of patients who met the criteria for participation in the study. The patient's physician was contacted for permission to approach the patient and to gain acceptance of the medical responsibility for the patient's participation in the study. After receiving physician approval, the patient was approached. An explanation of the study was given and written consent for participation obtained (see Appendix D). Subjects had any and all questions and concerns answered before the study proceeded. Willing subjects whose private physician allowed participation and who met the general screening criteria were evaluated for proper group assignment

TABLE III
DISTRIBUTION OF SUBJECTS ACCORDING
TO SELECTED DENTAL HISTORY VARIABLES

Characteristic		Number
Frequency of Previous Dental Care		
Twice yearly		15
Once yearly		55
Every other year		21
Emergency only		9
	TOTAL	100
Last Dental Visit		
1979		72
1978		18
1977		7
1976		2
1975		1
	TOTAL	100
Dental Insurance		
Yes		34
No		66
	TOTAL	100

Personal Dental Care

For personal dental care (see Table IV) prior to hospitalization, 97 subjects used a fluoride toothpaste. Two subjects used water only and one used salt and water. All 100 subjects used a toothbrush. Forty-six subjects brushed their teeth twice daily followed by brushing and flossing three times daily (36), brushing once a day (13) and brushing three times daily without flossing (4).

The oral care routine followed by the sample subjects during this hospitalization is compared to pre-hospitalization and summarized in Table IV. All but one subject brushed their teeth with a fluoride toothpaste. The one exception was rinsing with a mouthwash. Brushing the teeth twice daily remained the most highly represented frequency of personal dental care with a count of 55 subjects. Twenty-two subjects brushed and flossed three times daily, 17 brushed only once a day, and six brushed three times a day without flossing. In addition, 87 of the 100 sample subjects ranked a clean, comfortable mouth as a high priority.

Diet

At the time of data collection, 49 subjects were NPO. This medical order prohibits the patient from taking food or fluids by mouth. Forty subjects were on a regular diet and able to select their foods from a hospital menu. Seven subjects were on a soft diet which is very similar to a regular diet. The main differences are restrictions of fried foods and roughage on a soft diet. The remaining four subjects

TABLE IV
DISTRIBUTION OF SUBJECTS ACCORDING TO
PERSONAL ORAL CARE VARIABLES

Variable		Prior To Hospital		In Hospital
Daily Frequency Pattern				
3x and floss		36		22
3x		4		6
2x		46		55
1x		14		17
	TOTAL	100	TOTAL	100
Agent Used				
Fluoride Paste		97		99
Water		2		0
Salt & Water		1		0
Mouthwash		0		1
	TOTAL	100	TOTAL	100

were on a liquids only diet.

Characteristics Within Groups

Sample subjects were assigned to one of four groups on the basis of oral stressors present. Group 1 consisted of 26 subjects exposed to continuous oxygen therapy. Group 2 consisted of 25 subjects placed on NPO status; NPO (nothing by mouth is a medical order stating no food or fluids by mouth). Group 3 consisted of 24 subjects exposed to both oxygen therapy and NPO status. Group 4 consisted of 25 subjects who were neither NPO or on continuous oxygen therapy. Group 4 served as a control group and were matched with the experimental groups as to hospital unit and time of day during data collection.

Table V summarizes and compares the selected characteristics of age, number of teeth, time since last oral care, and length of stressor application for all groups. From Table V, it may be seen that those 26 subjects in Group 1 were exposed to continuous oxygen therapy for an average of one day. The oxygen delivery systems used were: 1) a mask (6 subjects); 2) a catheter (1 subject); and 3) a cannula (19 subjects). On the average subjects in this group: 1) had 11 permanent teeth missing; 2) were 59.7 years old; and 3) had mouth care almost five hours ago. Their overall average oral exam score as indicated in Table VI was 14.96. The range for Group 1 (see Table VII) was from 12 to 21; a normal score would have been 12 and the worst possible score

TABLE V
CHARACTERISTICS OF GROUPS

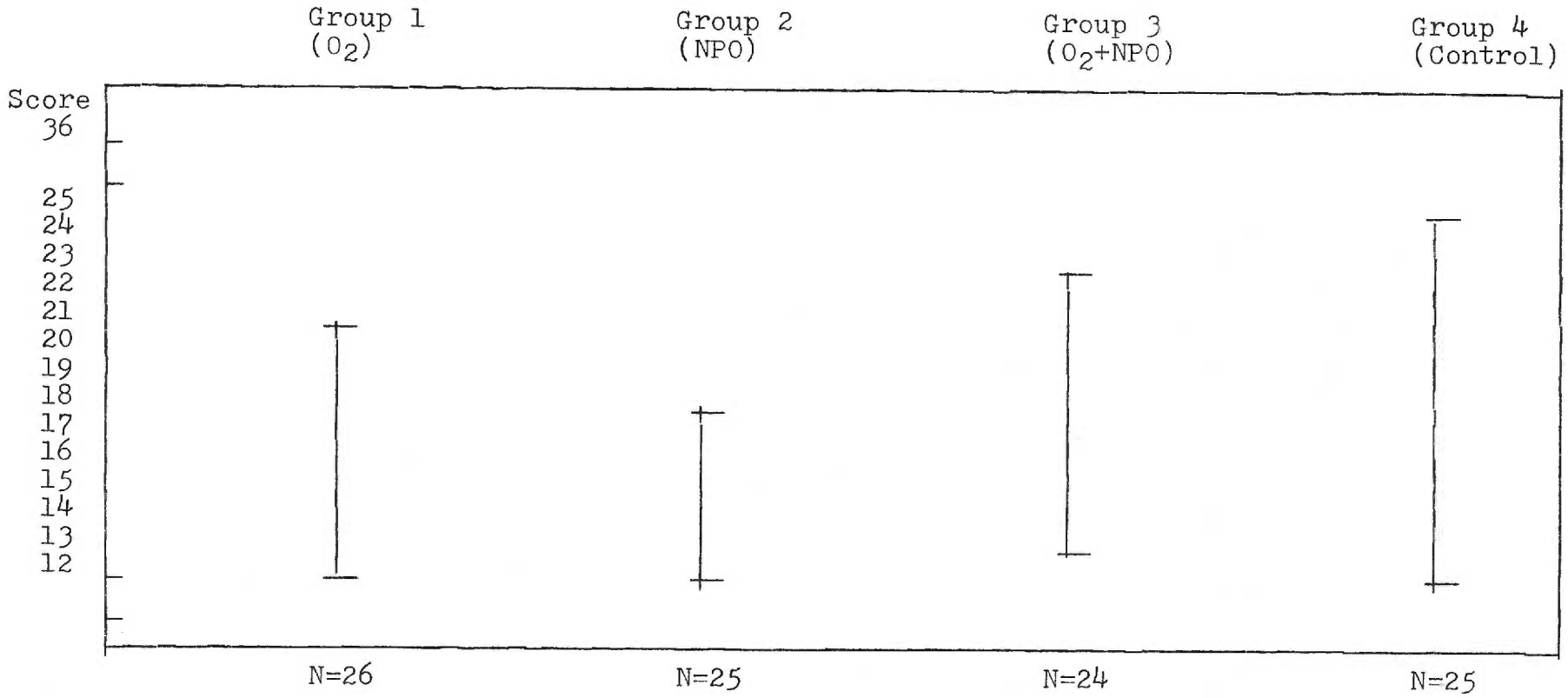
	Group 1 O_2 Stressor N=26		Group 2 NPO Stressor N=25		Group 3 NPO+O_2 N=24		Group 4 Control N=25	
VARIABLE	RANGE	$\bar{X}$	RANGE	$\bar{X}$	RANGE	$\bar{X}$	RANGE	$\bar{X}$
Age	38-84	59.7	24-80	51.8	21-82	57.8	36-80	57.2
Teeth	10-31	21	10-30	22	12-30	20	9-28	19
Last Oral Care (hours)	1-22	4.9	1-26	4.0	1-6	2.5	1-8	3.3
Stressor Time (hours)	8-46	24.2	3-33	10.8	3-41 1-41	11.3 (O_2) 11.1 (NPO)	No Stressors	

TABLE VI
MEAN ORAL STATUS SCORES BY GROUP

	Perception Total	Exam Total
Group 1 N=26	10.46	14.96
Group 2 N=25	9.60	14.08
Group 3 N=24	10.42	16.79
Group 4 N=25	9.36	12.68

N=100

TABLE VII
RANGE OF ORAL EXAM SCORES

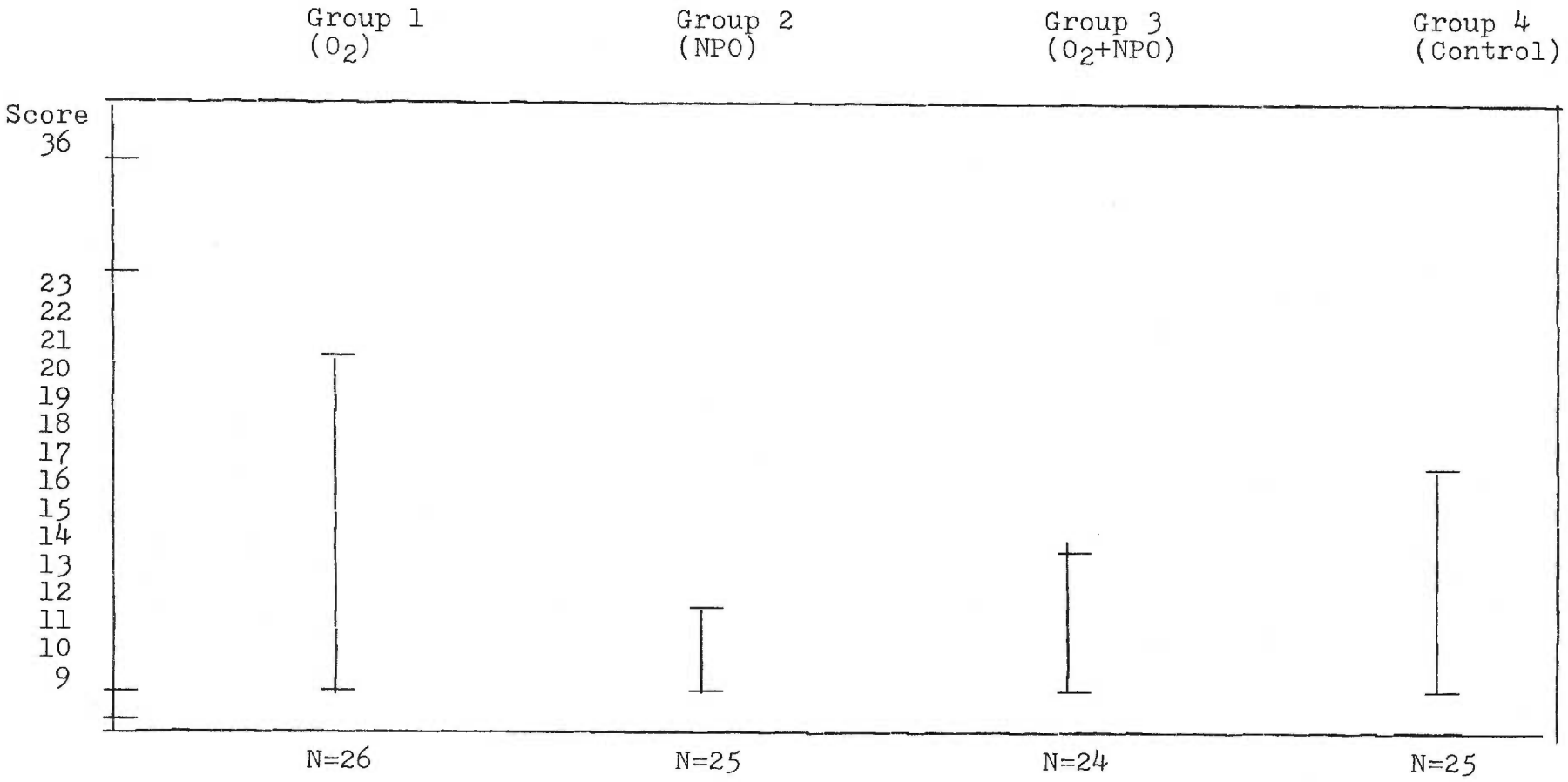


would have been 36. Their overall average oral perception score as indicated in Table VI was 10.46. The range for Group 1 (see Table VIII) was 9-21; a normal score would have been nine with 36 being the highest deviation from normal possible.

Subjects assigned to Group 2 (see Table V) were on the average younger (mean 51.8 years) and had retained more of their own permanent teeth (mean 22) than those assigned to the other study groups. The identified stressor, NPO status, had been present almost 11 hours on the average with a range of between 3 and 33 hours. These patients had received their last mouth care more recently (almost a full hour) than had the first study group, and their measured oral hygiene status scores were slightly less deviated from normal than Group 1 (see Table VI).

Some study subjects in both groups as indicated in Table VII received perfectly normal visual exam scores of 12; yet, the highest score attained between the two groups, indicating a worsening oral hygiene status, was in Group 1 (21). Eighteen was the worst oral exam score of any subject in Group 2. Furthermore, subjects in Group 2 perceived their mouths to be cleaner and more comfortable on the average (mean 9.60) than those in Group 1 (mean 10.46) as shown on Table VI. The range of perceived oral status (Table VIII) was much greater for Group 1 subjects than for Group 2.

TABLE VIII
RANGE OF ORAL PERCEPTION SCORES



The twenty-four subjects studied in Group 3 were exposed to both the stressors of continuous oxygen therapy and NPO status at the time of data collection. It may be seen from Table V that members of this group had received oral care more recently (mean 2.5 hours) than either of the previous two groups, and yet these subjects who were exposed to the highest level of oral stress demonstrated the poorest oral hygiene status upon visual examination (mean 16.79 - Table VI). As seen in Table VII, none of the subjects exposed to both stressors received a normal oral exam score of 12. This finding is in contrast to the scores attained by Group 3 subjects on the Oral Perception Guide. Perfect scores of nine were reported in a range of 9-14 (Table VIII). The group as a whole averaged a score as indicated in Table VI (10.42) slightly more normal than Group 1 (10.46) but definitely more abnormal in comfort than Group 2 (9.60).

Some of the NPO subjects in both Groups 2 and 3 had nasogastric tubes in place. Four subjects in Group 2 and six subjects in Group 3 were on intermittent gastric suction via a nasogastric tube. Additionally, of the 50 study subjects on continuous oxygen therapy, 38 received the oxygen flow via a short pronged nasal cannula. Nineteen of these 38 were in Group 3; the remainder in Group 3 (5) received oxygen via a face mask.

Subjects in Group 3 had been exposed to both oral stressors an average of 11 hours within a range of 1-41 hours

for NPO status and 3-41 hours for oxygen therapy (see Table V). Of the three stressor groups, Group 1 subjects were exposed to the stressor longer than either Groups 2 or 3.

The subjects in Group 4 (N=25) were not exposed to known oral stressors. Oxygen therapy, restricted food and fluids by mouth, medications (e.g. Chemotherapy, Dilantin, Tetracycline, Diuretics) and major medical conditions (e.g. Addison's disease, Leukemia) known to stress the oral cavity and its contents were controlled for by exclusion. Data were collected from these sample subjects on the same nursing units and at the same time of day as was data from the stressor groups. Both the oral exam scores and the oral perception scores (see Table VI) were closer to normal than for the three stressor groups on the average. However, the poorest mouth condition inspected in the entire sample (see Table VII) was in the control group (oral exam score 25), on a patient with 9 permanent teeth present. Group 4 subjects (see Table V) were about six months older than the average sample subject and had retained one less permanent tooth. Slightly more than 3.5 hours had elapsed since the last oral care had been given; and this was compared to an average of 3.71 hours since last care for the entire sample.

Characteristics of Oral Perception Scores and Oral Examination Scores

It may be seen from Table VI that as a group, those subjects (Group 3) with mouths in poorer condition upon visual examination were those exposed to both identified

stressors simultaneously. To rank order the groups into levels of stress (group assignment), Group 3 was the most stressed followed by Group 1 (oxygen only), Group 2 (NPO only), and lastly Group 4 (no oxygen or NPO status). From the patient's point of view, however, oxygen therapy alone (Group 1) contributed to the most oral discomfort followed closely by both oxygen therapy and NPO status. NPO status (Group 2) subjects' reported less oral discomfort than either Groups 1 or 3, and the control group (4) reported the least.

The Pearson Product-moment Correlation Coefficient was used to test the strength of the relationship between the total oral cavity exam scores and the total oral perception scores. For all subjects under study a strong, positive correlation was found between the oral exam scores and the oral perception scores ($r=.5577$, $p=.001$).

Multiple regression was used to examine the influence of selected variables on oral hygiene status as measured by the two study tools. Table IX summarizes the influence of: 1) group assignment and 2) age of the subject on oral hygiene status as measured by visual examination. These two variables together accounted for 27% of the variance within the oral exam scores. Group assignment was the variable that most influenced the oral exam scores ($r=.50$, $p < .001$).

It may be seen from Table X that group assignment was not the strongest variable correlated with the measurement of perceived oral hygiene status and oral comfort. The most

TABLE IX
ANALYSIS OF SELECTED VARIABLES RELATED
TO ORAL EXAM TOTAL SCORES

(N=100)

VARIABLE	MULTIPLE R	R SQUARE	R SQUARE CHANGE	SIMPLE R	OVERALL F
1. Group	.50144	.25144	.25144	.50144	*32.91842
2. Age	.52168	.27215	.02071	.18176	*18.13500

* Significance ($p < .001$)

TABLE X
ANALYSIS OF SELECTED VARIABLES RELATED
TO ORAL PERCEPTION TOTAL SCORES

(N=100)

VARIABLE	MULTIPLE R	R SQUARE	R SQUARE CHANGE	SIMPLE R	OVERALL F
1. Last Care	.35654	.12712	.12712	.35654	*14.27197
2. Group	.44017	.19375	.06663	.24295	*11.65501
3. Age	.49757	.24758	.05383	.28583	*10.52938

* Significance ($p < .001$)

significant correlation with oral comfort was the recency of oral care provided ($r=.35$, $p < .001$) followed by group assignment ($r=.24$, $p < .001$), and subject age ($r=.28$, $p < .001$).

Summary of Results

One hundred adult medical or surgical patients were assigned to one of the four testing groups based upon the oral stressors present. The majority of subjects were male, caucasian, with at least a high school education, a mean age of 56 years, and admitted to the hospital for either elective surgery or diagnostic tests. The majority had seen a dentist for routine check-ups within the last year. Prior to hospitalization, 97% of the sample used a fluoride toothpaste applied with a toothbrush (100%) for oral care at least twice daily (86%). These agents for and frequency of oral care continued during hospitalization.

The oral hygiene status of all subjects was measured by a visual oral exam and an oral comfort interview guide. The largest deviation from normal on the oral exam score was subjects exposed to both oral stressors (oxygen and NPO) simultaneously (Group 3), followed by oxygen stressed subjects (Group 1), NPO stressed subjects (Group 2) and the control group (4). Differing from the oral exam scores the oral comfort scores of groups deviated the greatest from normal on those subjects exposed to the oxygen stressor only (Group 1), followed by both the oxygen and NPO stressor (Group 3),

the NPO stressor (Group 2) and the control Group (4). There was a strong, positive correlation ($r=.5577$, $p=.001$) between the oral exam scores and the oral comfort scores. The recency of oral care correlated positively with the oral comfort score ($r=.35$, $p < .001$) and not at all with the oral exam scores. The length of time since last oral care, group assignment, and subject age accounted for almost 25% of the variance in oral comfort scores. Oral exams scores were most influenced by group assignment ($r=.50$, $p < .001$).

The null hypothesis of no correlation between the patient's perception of oral status and comfort as measured by an Oral Perception Guide and the visual examination of the patient's oral status as measured by an Oral Assessment Tool was therefore rejected.

CHAPTER IV

DISCUSSION

Discussion of Findings

The analysis of data shows a strong, positive relationship between perceptions of oral comfort and a visual examination of the mouth. Therefore, the hypothesis generated was not supported. However, this finding supports Beck's (1979) results that a strong correlation exists between oral exams and oral perceptions in both the control ($r=.86$, $p=.05$) and experimental ($r=.57$, $p=.05$) groups. The findings also supported the findings of DeWalt and Haines (1969) that subjective perceptions indicated worsening of oral status as visual signs of damage to oral tissues were observed. This support remains weak as DeWalt and Haines (1969) offered no statistical descriptions of this relationship. Furthermore, the findings of this study showed Group I subjects to be an exception to this trend. From Table VI it can be seen that Group I subjects had the highest deviation from a normal perception score of nine (10.46). Yet, their oral exam scores ranked second highest in deviation from a normal score of 12 (14.96) behind Group 3 subjects (16.79).

A number of comments about the relationship between perception of oral status and visual examination of oral status are in order. First, in this study subjects considered oral comfort and a healthy, clean mouth to be a high priority. Prior to hospitalization, the majority (70%) saw a dentist

routinely for check-ups once yearly or more often, brushed with a fluoride toothpaste (97%) at least twice daily or more often (86%). This investment of time and money into dental health was considerable yet only 34% carried dental insurance. During hospitalization sample subjects continued to practice good oral health habits. All but one (99%) brushed with a fluoride toothpaste at least twice daily or more (83%). This investigator found the sample subjects to be highly cognizant of the importance of a clean and healthy mouth and highly sensitive to their level of oral comfort.

In the area of oral inspections, this investigator found no mouths in as bad as condition as reported by DeWalt and Haines (1969). This finding is perhaps explained on the basis of the level of stress applied. DeWalt and Haines (1969) applied four stressors continuously for five hours. If all four stressors combined were the highest level of stress, then the findings of this study would implicate that the next level of stress would be a combination of two stressors (Group 3) followed by a stressor that actively does something to a patient (oxygen flow - Group 1), and lastly, a stressor that passively affects a patient (restriction of oral food and fluids - Group 2).

Oral exam scores from this study would support that concept. Group 3 who were subjected to both oxygen therapy and NPO status had visual examination scores that most deviated from normal (mean 16.79, normal=12). This finding was despite the fact that these patients had received oral

care more recently than the other group (mean 2.5 hours). It would seem clear that patients exposed to a combination of oral stressors are at high risk for developing oral problems and oral complaints. Yet, simply more frequent mouth care may not be the total solution. Data analysis found recency of oral care to be of no statistical significance when compared with oral exams. The overall sample average for length of time since last oral care provided was 3.7 hours.

Previous research has shown that benefits of past oral care are nullified within two to six hours (Ginsberg, 1961; DeWalt, 1975). Thus, results from this study as to the visually observable benefits of last oral care provided are supported by the literature. However, the data analysis revealed a strong, positive relationship between oral comfort and recency of oral care. It would seem clear that, although within a few hours of last care delivered the benefits of such care are no longer observable in the mouth, the patient's oral comfort and perception of oral hygiene status is highly influenced by the amount of time since nursing personnel last provided the opportunity and materials necessary for oral care. This finding could perhaps be explained on the basis of patient expectations of hospital nurses. It would seem apparent that hospitalized patients expect nursing care to make a difference in their physical status and comfort. Physical care and provisions for hygiene and comfort were found in White's (1972) study to be the hospital patient's number one expectation of

nurses.

Within this study sample, patient self-reports of perceived oral status and oral comfort were as accurate a predictor of the need for oral care as an inspection of the mouth. This finding supports the premise that nurses can use the patient's self-report of perceived oral status and oral comfort in planning for oral hygiene nursing care.

Level of stress (group assignment) and age of the subject were found to be significant variables on oral hygiene status measurements. Level of stress and age accounted for 27% of the variance in oral exam scores and close to 12% of the variance in oral comfort scores. The length of time the stressor was applied was not statistically compared with the oral hygiene status measurements as this data was missing in too many instances.

Comments need to be made about the usefulness of the measurement tools. This investigator found the Oral Perception Guide developed by Beck (1979) to be a sensitive indicator of oral comfort. Subjects had little difficulty identifying with the descriptive instrument statements. However, parts of the instrument were not applicable to all subjects (e.g. dentures, taste, and eating).

This investigator had more difficulty in the measurements made with the Oral Exam Guide developed by Bruya-Madeira (1975). Descriptive terms on this tool are clustered under numerical ratings (e.g. lips - cracked and bleeding); and at times one of the descriptive terms would apply (e.g. lips -

cracked) when the other would not (e.g. lips - bleeding). In looking at the tool, this investigator assumed that a deterioration in oral hygiene status would progress in stages from a normal of one to an abnormal two to a highly abnormal three. This was not found to be true in many cases. For example, many dry lips were seen that had not been either blistered or cracked.

Variables under physical status did not show variation within groups (e.g. all Group 3 members had a total physical status score of seven). All study subjects were oriented to time, place, and person (i.e. LOC=1) and none were edentulous (i.e. chewing ability = 3). Additionally, all subjects were able to perform their own oral care (i.e. self-care ability = 1), although 54 of the 100 subjects were on bedrest. Therefore, variables on the Oral Exam Guide under physical status were numerically scored and totaled, but did not add to the variables under the oral cavity as subjects within each group scored the same on the physical status categories.

Implications for Nursing

Oral comfort and assistance with oral care are a high priority for hospitalized patients. This finding supports the literature review (White, 1972) and underscores a need for nurses to diligently apply themselves to the traditional responsibilities of patient hygiene and comfort. Furthermore, nurses are in a position to influence the comfort of the patients in their care. Recency of care given was the most

significant variable influencing the patient's perception of oral comfort and oral hygiene status. This finding is even more striking when one considers that recency of care made no significant contribution to the variable of oral hygiene status as measured by oral inspection. The mouth examination score was most influenced by the level of stress (group assignment). A strong, positive correlation was found when oral perception and oral exam scores were compared. It would seem imperative then that a systematic and thorough oral assessment include both subjective and objective data when performed by hospital nurses. Both kinds of data contribute to an assessment of the need for oral hygiene nursing care. The following recommendations for further study developed as a result of the present investigation:

1. A replication of this study with the following changes: (a) use a larger population sampled in a random manner to increase the generalizability of findings, and (b) control the independent variables of frequency of oral care given and length of stressor application.

2. Design a descriptive study that would specifically delineate the observable effects of all the oral stressors identified by DeWalt and Haines (1969) in separate groups.

3. A longitudinal study of subjects exposed to oral stressors where each subject could serve as their own control.

4. Further test the Oral Perception Guide.

5. A descriptive study of the oral hygiene status of patients upon hospital admission in order to further test

the findings of McPhetridge (1973) with the findings in this study as to the effects of prior dental care and dental problems.

Limitations

The accuracy of the data collected on the independent variables of length of time since last oral care, hours stressor was present, subjects' prior dental care and subjects' hospital oral care relied on the precision of patient recall and the validity of nurses' charting. This was a definite limitation of this study.

Prohibitive costs eliminated the possibility of using oral cultures as a measurement tool for oral hygiene status. As nasal oxygen flow and NPO status are reported to visibly dry and blister oral tissues predisposing them to infection, cultures of the mouth may have been useful data for this study.

Only those patients assigned to the target units during the time available for data collection could be included as study subjects.

CHAPTER V

SUMMARY AND CONCLUSIONS

This study was conducted to compare the visual examination of oral hygiene status as measured by an Oral Assessment Guide with the subjects' perception of oral hygiene status and comfort as measured by an Oral Perception Guide for those subjects exposed to the specific oral stressors of continuous oxygen therapy and nothing-by-mouth (NPO) status. One hundred subjects from medical and surgical wards in an acute care facility were studied. Comparisons were made between the oral exam scores and the oral perception scores with either the stressor of oxygen, NPO, or both present. The findings in each of these three groups were compared with a control group. A strong, positive correlation was found between the subjects' perception of oral status and a visual inspection of oral status ($r=.56$, $p=.001$).

The following conclusions were drawn:

1. A clean and comfortable mouth was a high priority with these hospitalized adult medical-surgical patients.

2. Nurses can make significant contributions to the comfort of the patients in their care because the length of time since mouth care was last provided was the variable that most influenced the patient's perception of oral comfort and oral hygiene status.

3. Nurses should anticipate that the mouth of a patient exposed to a combination of oral stressors will require more frequent and thorough oral hygiene nursing care because oral

exam scores for those subjects exposed to both oxygen therapy and NPO status had the highest deviations from normal.

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APPENDIX A

Beck Oral Perception Guide

ORAL PERCEPTION GUIDE

NUMERICAL AND DESCRIPTIVE RATINGS

CATEGORY	1	2	3	4
LIPS	My lips feel moist and comfortable.	My lips feel slightly dry.	My lips are dry and burn especially at the corners.	My lips burn intensely. They are cracked and it hurts to open my mouth.
TONGUE	My tongue is moist and comfortable.	My tongue is slightly dry and sticks to the roof of my mouth.	My mouth feels like cotton and my tongue feels numb.	My tongue feels thick, dry and numb with an intense burning at the tip.
GINGIVA	My gums feel moist and comfortable.	My gums are a little sore but I am hardly aware of it.	My gums are sore and it is annoying.	My gums are so sore that I am constantly aware of pain.
SALIVA	My mouth feels moist.	I feel like my saliva has increased.	I feel like my saliva has decreased.	My mouth is very dry and my saliva is very thick.
TEETH	My teeth feel clean.	There is a small amount of debris on my teeth.	There is a moderate amount of debris on my teeth.	My teeth are covered with debris.
DENTURES	My dentures fit well; there is no discomfort.	I have a slight discomfort when I wear my dentures but I am hardly aware of it.	It is annoying and painful to wear my dentures and I take them out frequently.	It hurts so much that I can't wear my dentures.
TASTE	There is no change in my taste.	Things taste slightly different.	Nothing tastes right.	I can't taste anything.
VOICE	My voice sounds normal.	My voice sounds lower.	My voice sounds deep and raspy.	It is difficult to talk when my mouth is so dry; it hurts when I try to speak.
EATING	I have no difficulty eating because of my mouth.	It is harder to eat because my mouth is so dry.	Certain foods, especially hot and spicy foods burn my mouth.	It hurts so much to chew and swallow that I can't eat.

APPENDIX B

Bruya-Madeira Oral Assessment Tool

GUIDE FOR ASSESSMENT OF THE MOUTH

Variables	Numerical and Descriptive Rating 3	2	1
1. Physical Status			
a. level of consciousness	nonresponsive unconscious	apathetic, occasionally disoriented	oriented to time, place and person responds appropriately
b. breathing habits	respirator, tracheostomy or endotracheal tube	mouth breather nasal O_2/mask O_2	nose and mouth breathing without mechanical assistance
c. nutritional habits/diet	NPO, dehydrated gastrostomy, jejunostomy, IV lines	nondetergent diet variable or limited fluid intake	normal fluid and detergent diet
d. chewing ability	impairment in jaw separation, edentulous-without dentures, overt dental problems, oral disease	edentulous with poorly fitting dentures, limited biting strength	normal teeth and chewing ability
e. self-care ability	total dependence on others	feeds self, performs mouth care with help	totally responsible for self-care
2. Oral Cavity			
a. lips			
1) texture	cracked, bleeding	rough	smooth, soft
2) color	red, inflamed, some bleeding	some reddened areas	pink
3) moisture	dry, cracked	blistered	moist
b. tongue			
1) texture	coated at base, engorged, deeply grooved, thicker than normal	vallate papillae and lingual groove prominent	firm, without fissures or prominent papillae
2) color	very red tip, sides blistered	pink with reddened areas	pink
3) moisture	dry with indentations, patient complains of burning	"tongue sticks to roof of mouth," dry	moist
c. mucous membrane of the palate, uvula, and tonsillar fossa	red with general inflammation, blisters, & pinpoint brown spots on palate subsequently, oral mucosa becomes pale, almost white	dry, pale palate	moist, pink
d. gingival tissue	red, shiny, bleeding, edematous	pink to red shiny, edematous	moist, resilient pink
e. teeth	dull, debris clinging to two-thirds of surface visible	dull, mucus and debris clinging to enamel in one-half area visible	glossy, no debris
f. saliva	ropy, viscid, or mucid	mouth dry or saliva scanty	thin watery entire oral cavity moist
g. taste	impaired	impaired	normal taste sense
h. voice	difficulty in articulating words	deep and raspy	normal tone and quality

APPENDIX C

Data Collection Tool

ORAL HYGIENE NURSING STUDY

DEMOGRAPHIC

RESEARCHER/PATIENT

(1-3) _____ _____ _____ Identification
1 = Group 1
2 = Group 2
3 = Group 3
4 = Group 4

(4-5) _____ _____ Age (to nearest year)

(6) _____ Race
1 = Caucasian
2 = Black
3 = Spanish/Mexican American
4 = Oriental
5 = Other
6 = Unknown/Unspecified

(7-8) _____ _____ Education
1-16 = highest grade level through 16
17 = Bachelor's degree
18 = Master's degree
19 = Doctoral
20 = Post-doctoral

(9) _____ Occupation
1 = Professional, technical, and kindred works
2 = Managers, officials, proprietors (except farmer)
3 = Clerical, sales, and kindred workers
4 = Craftsman, fireman, and kindred workers
5 = Operatives and kindred workers
6 = Service workers, including private
7 = Laborers, except farm and mine

DENTAL HISTORY

(10) _____ Previous dental care
1 = twice yearly
2 = once yearly
(cont'd.)

DENTAL HISTORY		RESEARCHER/PATIENT
(10) Cont'd.		Previous dental care 3 = every 2 years 4 = emergency only 5 = never had care
(11)	_____	Last dental care 1 = 1979 2 = 1978 3 = 1977 4 = 1976 5 = 1975 6 = other/none
(12)	_____	Purpose of last dental care 1 = routine exam with x-ray 2 = routine exam without x-ray 3 = cleaning 4 = amalgum (filling) 5 = extraction 6 = denture care (fitting adjustment) 7 = other _____
(13)	_____	Agent used for dental care 1 = mouthwash 2 = toothpaste without fluoride 3 = toothpaste with fluoride 4 = water 5 = other _____
(14)	_____	Personal dental-care prior to hospitalization 1 = none 2 = brush x 3 with floss 3 = brush x 3 without floss 4 = brush x 2 5 = brush x 1 6 = mouth wash only 7 = floss only 8 = other _____
(15)	_____	Dental insurance 1 = yes 2 = no

DENTAL HISTORY

RESEARCHER/PATIENT

(16-17) _____ _____ Number of teeth (0-32)

(18) _____ Dentures
1 = full
2 = partial
3 = not applicable

HOSPITAL DENTAL CARE

(19) _____ Personal dental care
1 = none
2 = brush + floss x 3
3 = brush x 3
4 = brush x 2
5 = brush x 1
6 = mouth wash only
7 = floss only
8 = other _____

(20) _____ Agent used for dental care
1 = mouthwash
2 = toothpaste with fluoride
3 = toothpaste without fluoride
4 = water
5 = other _____

(21) _____ Current diet
1 = NPO
2 = Liquid
3 = soft
4 = regular
5 = TPN/IV
6 = tube feeding

(22-23) _____ _____ Reason for admission
1 = surgery
2 = diagnostic tests
3 = diabetes
4 = renal disease
5 = stroke
6 = ASHD
7 = COPD
8 = cancer
9 = other medical problem
10 = other exams

ASSOCIATED MEDICAL CONDITIONS

(24-25) _____ _____

RESEARCHER/PATIENT

1 = Diabetes
2 = Renal disease
3 = Stroke - CVA
4 = ASHD
5 = Cancer
6 = Etohism
7 = Smoker 5 years
8 = Smoker 5 years
9 = Drug abuse
10 = Arthritis
11 = Lupus
12 = Anemia
13 = Addison's disease
14 = Oral cancer
15 = Gingivitis
16 = Periodontitis
17 = Herpes simplex
18 = Nutritional deficiency dx
19 = Liver failure
20 = Stomatitis
21 = Anorexia
22 = GI diagnosis
23 = COPD

PATIENT EVALUATION

Perception Guide

(26) _____ Lips

(27) _____ Tongue

(28) _____ Gingiva

(29) _____ Saliva

(30) _____ Teeth

(31) _____ Dentures

(32) _____ Taste

(33) _____ Voice

(34) _____ Eating

PHYSICAL STATUS		RESEARCHER/PATIENT
(35)	_____	LOC
(36)	_____	Breathing habits
(37)	_____	Diet
(38)	_____	Chewing ability
(39)	_____	Self care
ORAL CAVITY		
(40)	_____	Lips - texture
(41)	_____	Lips - color
(42)	_____	Lips - moisture
(43)	_____	Tongue - texture
(44)	_____	Tongue - color
(45)	_____	Tongue - moisture
(46)	_____	Mucous membranes
(47)	_____	Gingival tissue
(48)	_____	Teeth
(49)	_____	Saliva
(50)	_____	Taste
(51)	_____	Voice
(52)	_____	N/G tube in place 1 = yes 2 = no
(53)	_____	Oxygen delivery system 1 = mask 2 = catheter 3 = cannula 4 = none
(54)	_____	Agents at bedside 1 = yes 2 = no

ORAL CAVITY			RESEARCHER/PATIENT
(55-56)	_____	_____	# hours since last oral care

(57-58)	_____	_____	# hours oxygen therapy continuously
			99 = not applicable

(59-60)	_____	_____	# hours NPO
			99 = not applicable

(61)		_____	Sex 1 = male 2 = female
(62)		_____	Patient priority 1 = high 2 = low 3 = don't know

APPENDIX D

Informed Consent Form

University of Oregon Health Sciences Center

Portland, Oregon

CONSENT FORM

A Study of Oral Hygiene Status in Patients
Exposed To Specified Oral Stressors

I, _____ herewith agree to serve as a subject in the investigation named "A Study of Oral Hygiene Status in Patients Exposed To Specified Oral Stressors," by Renee Pike, R.N., under the supervision of Sharon Clark, R.N., M.N.

This investigation aims at determining how nurses could better assess the need for oral hygiene nursing care in hospitalized patients.

The procedures to which I will be subjected are an interview about the condition of my mouth and a visual inspection of my mouth. The interview will last no longer than 5 minutes and further data may be collected from my hospital chart. The oral inspection will require me to open my mouth and have its contents visually inspected using a tongue blade, gloved finger, and penlight. The inspection will last no longer than 5 minutes. The oral assessment will utilize a previously published oral hygiene rating scale.

Benefits to me may be minimal, but the potential outcome from this study may dictate nursing care decisions for future patients. No risks to the patient are expected. Complications which may be identified during the time of the study will be immediately referred to my private physician by the unit head nurse.

The information obtained will be kept confidential. The patient's name will not appear on the records and anonymity will be assured by the use of code numbers.

Renee Pike has offered to answer any questions about participation in this study. I understand that I may refuse to participate or withdraw from this study at any time without affecting my relationship with, or treatment at, Emanuel Hospital.

It is not the policy of the Department of Health, Education and Welfare, or any other agency funding the research project in which you are participating, to compensate or provide medical treatment for human subjects in the event the research results in physical injury. The University of Oregon Health Sciences Center, as an agency of the State, is covered by the State Liability Fund. If you suffer any injury from the research project, compensation would be available to you only if you establish that the injury occurred through the fault of the Center, its officers or employees. If you have further questions, please call Dr. Michael Baird, MD, at (503) 225-8014.

I have read the foregoing and agree to participate in this study.

_____ _____
Name of Patient Signature of Patient

_____ _____
Date Time Witness

AN ABSTRACT OF THE THESIS OF

RENEE CELESTE PIKE

for the Master of Nursing

Date of Receiving this Degree: June 8, 1980

Title: A STUDY OF ORAL HYGIENE STATUS IN PATIENTS EXPOSED TO SPECIFIED ORAL STRESSORS

Approved: [redacted]

Sharon R. Clark, M.N., Thesis Advisor

Individual and systematic assessments of oral hygiene status have been suggested as a way of determining both the need for oral hygiene nursing care and evaluating the effectiveness of such care (Ginsberg, 1961; Passos & Brand, 1966; VanDrimmelen & Rollins, 1969; DeWalt, 1975). The present study was undertaken to compare the assessed oral hygiene status of hospitalized patients exposed to specified oral stressors. The subjects were divided into four groups according to oral stressor present. Group 1 subjects (N=26) were hospitalized patients on continuous oxygen therapy. Group 2 subjects (N=25) were hospitalized patients restricted from taking food or fluids by mouth (NPO). Group 3 subjects (N=24) were exposed to both oxygen therapy and nothing by mouth status. Group 4 (N=25) subjects were exposed to no oral stressors and served as a control group.

The hypothesis generated was that there would be no correlation between the visual inspection of the oral cavity and the subjects' perception of oral hygiene status.

Oral hygiene status was measured in the following two ways: 1) a visual inspection of the oral cavity utilizing the Bruya-Madeira Oral Assessment Guide, and 2) the Beck Oral Perception Guide constructed to numerically score the subjects' perception of oral hygiene status and comfort.

Major findings of the study were:

1. The hypothesis generated was not supported by the findings.

2. There was a strong, positive correlation between the visual inspection and the subject's perception of oral hygiene status ($p=.001$).

3. Length of time since the last oral hygiene nursing care provided was the variable that most influenced the subjects' oral comfort and perception of oral hygiene status.

4. The level of oral stressor present (group assignment) was the variable that most influenced the oral exam score.

5. The subjects exposed to a combination of oral stressors (Group 3) had the highest deviation from normal scores as measured by the Oral Exam Guide.

6. Oral comfort and a clean mouth were a high patient priority.