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The Development and Evaluation of a Seminar for Teachers on the Awareness and Management of Allergic Conditions of their Students in the Classroom

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THE DEVELOPMENT AND EVALUATION OF A SEMINAR FOR TEACHERS ON THE AWARENESS AND MANAGEMENT OF ALLERGIC CONDITIONS OF THEIR STUDENTS IN THE CLASSROOM

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A Dissertation

Presented in Partial Fulfillment

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ABSTRACT

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ABSTRACT OF GRADUATE STUDENT RESEARCH

Dissertation

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Department of Education

Title: THE DEVELOPMENT AND EVALUATION OF A SEMINAR FOR TEACHERS ON THE AWARENESS AND MANAGEMENT OF ALLERGIC CONDITIONS OF THEIR STUDENTS IN THE CLASSROOM

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Problem

Many children with allergic problems go without treatment because their problems go unrecognized by both their parents and teachers.

The purpose of this project was to bring about change on the part of teachers enabling them better to address allergic problems in their students.

Literature was reviewed with respect to allergies and with respect to the use of inservice seminars for teachers.

The posttest means for all three areas of measurement of the seminar group and control group were adjusted for pretest scores by analysis of covariance which indicated a significant difference in favor of the seminar group in each area.

Conclusion

With the attainment of significance in most areas of this research study the teachers demonstrated that they could benefit from training in the area of children's health problems. Recommendations were made to reduce teacher resistance to the seminar by relating health problems and by involving a team of specialists in the presentations.

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CHAPTER I

INTRODUCTION

General Statement

Allergies have been known to exist for many years and frequently have been considered of little importance or primarily of psychosomatic origin, which some undoubtedly are. All too often, however, the serious health problems in children connected with some real allergies are overlooked by parents and teachers.

To deal effectively with the special problems of allergic children, it is important to study their total environment. Allergists recommend the removal of many things from a child's sleeping room in an attempt to control symptoms. These articles are often a part of some classrooms--some being more necessary than others.

A child who is constantly exposed to articles to which he is allergic has health problems proportionate to the extent of his reaction to the antigen that he contacts. It seems apparent that prolonged, unnecessary exposure to allergens in the classroom lowers the quality of work an allergic child does in school and causes a progressive deficit effect similar to that of any other learning problem--even though the child may be otherwise bright and capable of outstanding performance.

Allergies may affect a child in a multitude of ways.

Symptoms can be anything from a clear nasal discharge to a psychosis--from the aggression to the timidity that causes other students to reject the child.

During the time the writer was pursuing graduate studies, he became increasingly aware of the importance of good physical health and the role it plays in a child's early education. This interest was intensified by concern for two nephews, both with severe allergy problems, as they struggled through grade school. One boy was asthmatic, the other was prone to "hay fever" type allergy problems.

The writer, realizing that teachers like himself are usually ill-equipped to understand and to aid children who are allergy prone, conceived this study in the desire to provide benefits to all concerned. In close consultation with a pediatrician (his wife), he sought to present suggestions and instructions to teachers and parents so that adjustments could be made to improve conditions for afflicted children.

What appeared to be lacking was a point of intervention with allergic children by a concerned adult who has considerable contact with many children and can recognize the problem and thereby recommend medical help for the afflicted child.

Statement of the Problem

The persons most knowledgeable in the area of childrens' allergies are highly-trained specialists with a specialized, technical vocabulary and specialized diagnostic procedures. These specialists come in contact with a few children on a one-to-one basis. These children usually have been referred from other medical doctors. Many

other children with similar problems are ignored because the adults who are responsible for their welfare have not recognized their difficulty. Unfortunately, while the quality of medical help is continually improving, many children are totally deprived of help that might easily be given to them.

Purpose of the Study

The intent of this study was to develop a meaningful in-service training seminar for teachers to help them:

1. Develop a better general knowledge of symptoms of allergies and the magnitude of problems that can result from allergies.

2. Increase their ability to recognize the allergic child in their classes and determine their best course of action to accommodate the child's needs and reduce his discomfort.

3. Adjust their classroom materials and program to best accommodate the allergic child with a minimum of deviation from usual procedures.

4. Recognize when the allergic child needs medical help.

Research Hypotheses

The hypotheses are stated in this chapter as research hypotheses, that is, the result which would be expected from the design of the study.

1. The posttest mean of the seminar group on knowledge of allergies will be significantly greater than its pretest mean.

2. The posttest mean of the seminar group on knowledge of classroom adjustment for allergies will be significantly greater than its pretest mean.

3. The posttest mean of the seminar group on symptom recognition will be significantly greater than its pretest mean.

4. The posttest mean of the control group on knowledge of allergies will not be significantly greater than its pretest mean.

5. The posttest mean of the control group on knowledge of classroom adjustments for allergies will not be significantly greater than its pretest mean.

6. The posttest mean of the control group on symptom recognition will not be significantly greater than its pretest mean.

7. The posttest mean of the combined seminar group on knowledge of allergies will be significantly different from the pretest mean of the combined control group.

8. The posttest mean of the combined group which had the pretest, on knowledge of allergies, will not be significantly greater than the posttest mean of the combined group which had no pretest.

9. There will be no significant interaction between treatment (seminar) effect and pretest effect with respect to knowledge of allergies.

10. The posttest mean of the combined seminar group on knowledge of classroom adjustment will be significantly different from the posttest mean of the combined control group.

11. The posttest mean of the combined group which had the pretest, for knowledge of classroom adjustment for allergies, will not be significantly greater than the posttest mean of the combined group which had no pretest.

12. There will be no significant interaction between treatment (seminar) effect and pretest effect with respect to knowledge of classroom adjustment for allergies.

13. The posttest mean of the combined seminar group on symptom recognition will be significantly different from the posttest mean of the combined control group.

14. The posttest mean of the combined group which had the pretest, for symptom recognition, will not be significantly greater than the posttest mean of the combined group which had no pretest.

15. There will be no significant interaction between treatment (seminar) effect and pretest effect with respect to symptom recognition.

16. There will be a significant difference between the means of the seminar group and the control group on posttest scores of knowledge of allergies, when adjusted for pretest scores.

17. There will be a significant difference between the means of the seminar group and the control group on posttest scores for knowledge of classroom adjustment, when adjusted for pretest scores.

18. There will be a significant difference between the means of the seminar group and the control group on posttest scores for symptom recognition, when adjusted for pretest scores.

Definition of Terms

Allergy. "Popularly, excessive sensitiveness to certain substances, as germs, pollen, food, hair, or cloth, to mental or emotional excitement, or to physical conditions, as excessive cold, which are harmless to most people. Thus, contact with feathers or the eating of certain food may cause hives in a person who has an allergy for these substances" (Webster's Collegiate Dictionary, 9th Edition, 1981, s.v. "Allergy."

Antigen or Allergen (used interchangeably). A substance or foreign body causing allergic reaction.

Antibody. Any of various bodies or substances in the tissues or fluids, as blood or serum, of an organism which act in antagonism to specific foreign bodies such as toxins or the bacteria producing the toxins.

Sensitize. To render sensitive to, or unusually susceptible to, the action of a serum by repeated injection.

Desensitize. To render insensitive to, or cause to become nonreactive to, the action of a serum, antitoxin, etc.

Immunity. State or power of resisting the development of a disease, especially of resisting infecting microorganisms or their products.

Delimitations

1. Random selections of teachers was made by school, rather than by individuals, when choosing experimental or control groups, to prevent contamination of the control groups.

2. The results of the study were applicable only to the teachers in Corunna, Perry, and Chesaning school districts during the school year 1982-83 for the roles they had in the project.

3. The study was confined to an evaluation of the knowledge gained as a result of the seminar.

4. The extent to which halo effect was involved in the various groups from foreknowledge that it was a research study was not appraised.

Limitations

1. Since mandatory inservice training was nearly nonexistent, because of strong teacher organizations, it was nearly impossible to expect complete participation in any seminar.

2. Tightening control on confidentiality laws made it increasingly difficult to obtain information on children in schools.

3. Children who are medically desensitized have a minimum of symptoms which are difficult to recognize

4. Teacher organization demands for limits on inservice time made a follow-up impossible in the schools of this research study.

Summary

About 10 percent of the children in the school-age population have allergic problems. A portion of these are going unrecognized and therefore untreated.

The intent of this research was to evaluate the likelihood that teachers can benefit significantly in knowledge and abilities to aid their students. A secondary factor was to justify further or ongoing work with teachers for the benefit of allergic children.

CHAPTER II

REVIEW OF LITERATURE

This chapter contains a review of literature regarding allergy with respect to early history, asthma, headaches, dietary management, school adjustment, exercise problems, alertness problems, current writings, and case studies. Literature is also included on seminar methodology.

Early History

The problems of allergy and asthma have existed from antiquity; but little has been recorded. Hippocrates, in his treatment of asthmatic conditions, noted the patient's need to guard against anger and other emotions as these would precipitate an attack. Consequently he viewed asthma primarily as a "nervous disorder" (Berkart, 1889, cited in Harnett, 1971, p. 20). In more recent times, Haen (1704-1776) was reported to have had convulsions from eating six strawberries, while an anatomist named Gavard suffered convulsions and vomiting from eating apples. In 1778, Fothergill discovered that buttered toast or malt liquor would cause him to have a magraine headache. In 1885, convulsions were reported by Fort from eating beans and in 1904 by Spratling from eating peaches, shellfish, and strawberries (Speer, 1970, pp. 4-5).

Significant activity did not start until the late

nineteenth century. An Englishman by the name of Blackley noted allergic symptoms and became renowned for his study of hay fever in Experimental Research on the Cause and Treatment of Catarrhus Aestius (hay fever or hay asthma), published 1873. In 1896 Gould and Pyle identified allergic symptoms in Anomolies and Curiosities of Medicine (Speer, 1970, pp. 4-5).

Origin of the Term "Allergy"

Acceleration of the local reaction to cowpox vaccinations in immune persons, which was recognized as an immunologic reaction in man, was described by Jenner in 1801, and in 1840 Koch described the hypersensitivity reaction to tuberculin in individuals with tuberculosis. Severe systemic reactions, occasionally leading to death, following intravenous innoculations of foreign protein into animals were described by Portier and Richet and again by Theobald Smith in 1902. This phenomenon was called anaphylaxis, the antithesis of prophylaxis or protection. Rosenau and Anderson showed that anaphylaxis was elicited only by a specific antigen to which an animal had been sensitized. VonPirquet coined the term "allergy" in 1907 to describe the altered reaction and clinical manifestations observed in humans following exposure to foreign proteins (Harrison, Adams, Bennett, Resnik, Thorn, & Wintrobe, 1962).

Refinement of knowledge about allergies followed the claim, in 1911, of Herzfield, a physician, that certain foods caused his migraine headaches. This was studied in 1915 by Rohren, who was able to generate strong supportive evidence. Paquieq, in 1919, was able to demonstrate that chocolate was frequently an allergen

responsible for allergic discomforts (Ogden, 1948, cited in Havard, 1974, pp. 18-19).

Behavioral disturbances resulting from allergies were noted in 1916 by Hoobler, a pediatrician, who observed that restlessness and irritability are allergic manifestations in many cases. In 1922, Shannon also noted "irritable, peevish, and out of sorts behavior" from eczema and asthmatic patients (Speer, 1963, p. 330). Several studies were able to link the allergic disorders and asthma to familial occurrences (Cooke & Vander Veer, 1916; Spain & Cooke, 1924; Peshkin, 1926; Wizner, Zieve, & Fries, 1936; Ratner & Silberman, 1952; cited in Harnett, 1971, p. 21).

In 1927, Kahn recognized pollens as allergens causing the full amount of allergic symptoms known at the time (Kahn, 1927, cited in Havard, 1974, pp. 19-20). Rowe, studying food allergies in 1930, recognized additionally that fatigue, drowsiness, and slowness of thought could be added to the other suspected behavioral problems (Rowe, 1930, cited in Havard, 1974, p. 20). In 1932 Alvarez described this as "dullness of the brain" secondary to eating the offending food (Speer, 1970, p. 10).

Asthma

In 1941, French and Alexander started treating asthma as an allergic problem because many patients reported that their attacks started from contact with certain items. This was coupled with the fact that some asthma remitted with moves and changes of environment. Studies of the link of psychological problems and asthma were begun in England and were replicated by several studies (Gillespie, 1936; Schatia, 1958; Neuhaus, 1958; Leight & Rawnsley, 1956; cited

in Harnett, 1971, p. 23). Randolph cited the necessity of evaluating allergic problems in studies of the causes of fatigue, irritability, and behavioral problems (Randolph, 1947, cited in Havard, 1974, p. 20).

The psychosomatic problems of children with asthma and other allergies as being the precipitating causes for the onset of asthmatic disorders received much attention and research during the 1950s and early 1960s (Owens, 1963, cited in Harnett, 1971, p. 24; Peshkin, 1966, pp. 265-77).

Headaches

Inhalants, as offending allergens, came into recognition in 1948 when Ogden published an article citing them as a cause of allergic headaches (Ogden, 1948, cited in Havard, 1974, p. 19).

In 1950, Clark theorized that the allergic response was at the cellular level of body function and included brain cells as well as other parts of the body (Clark, 1950, cited in Havard, 1974, p. 21). Speer coined the "allergic tension-fatigue syndrome" term to represent his transcending observations of allergic patients' decreased activities (Speer, 1963, p. 330). The decreased activity seems to be from chronic minor headache pain and chronic minor depression that can accompany any long-term illness.

Dietary Management

Treatment controversies in the field of allergic disorders started in the late 1960s and extended into the late 1970s. Each controversy has case studies to support it but lacks satisfactory controls and convincing statistics to ensure that scientific methods have been upheld.

A paper read 13 November 1967 before the Southern Medical Association (Sixty-first Annual Meeting, Miami, Beach, Florida) and entitled "The Relationship of Allergy to Cerebral Dysfunction" seems to have played an early part in the current "brain allergy" controversy. This paper presented a pilot study on twenty learning-disabled children with abnormal EEG's who were treated by avoidance of foods to which they were known to be allergic. Over a two-to-fifteen-month period, nine of the twenty developed normal EEG patterns and two showed improvement. The measurement of mentality during the study remained essentially unchanged (Baldwin, Kilteler, & Ramsay, 1968). Even this early study caused many to question what was happening at the blood-brain barrier level, because of the EEG changes in about half of the subjects without significant changes in mentality. This question, to the present date, remains unanswered.

The controversy comes about over whether the brain is being affected by allergy or some secondary factor. Scientific proof at this time seems beyond current technology.

The current trend in management of allergies by megavitamin therapy, as well as the trend for dietary improvement, cite the 1968 "othomolecular" concept of Dr. Linus Pauling as their basis (Adler, 1978). The general concept that improvement in meeting the body's nutritional needs makes a healthier person seem to make sense. However, the flooding of the body with many times its normal need of some nutrients, which it must in turn store or discard to make a healthier body, presents the controversy. It would therefore require more proof on a statistical basis (which does not seem to

be forthcoming) that would verify the many claims of impartial observation and support on the positive side. No report of studies failing to give positive support have been seen by this writer.

A recent addition to the controversy on diet (Lilliston, 1973) is that concerning hypoglycemia. The controversy needs some separate treatment, however, as the issue is whether an allergic factor or functional hypoglycemia contribute to hyperactivity. This theory purports that excessive intake of sugar causes an increase in insulin and later drives the blood sugar down too far. This overreaction deprives the brain of its needed nutrition and sets off the hyperactive behavior. The fact that this reaction is not demonstrable either by antibodies or by glucose tolerance tests is the cause of the controversy. As a result, some treatment programs promote megavitamin therapy and other concepts advise the withholding of sugar as part of a "shotgun" or "multiple" approach (Smith, 1976; Love, 1977; Powers & Presley, 1978). Others reject all these methods for lack of measurable proof, which has prevented their acceptance into mainstream allergy literature and/or the endorsement of most allergists.

Feingold (1975) introduced the concept that dyes, flavorings, salicylates, and any of the then 2,764 additives in foods could cause a reaction in various individuals and may be responsible for much of the hyperactive behavior in existence today. His research has received limited acceptance because of dependence on a case-study approach and lack of adequate statistical design.

Dr. Lendon H. Smith (1976) stands out for his ability to pull together many of the above unproven observations to spin a theory which fits most situations. He observes that the allergic person

has abnormal blood protein and globulin E and lacks some of the other nutrients such as vitamins necessary for the adrenal glands to make the body's natural cortisone. He also suggests that the use of sugar exhausts the body's ductless system which attempts to maintain normal blood sugar levels and therefore becomes unable to produce (from lack of material, i.e., glucose) the cortisone needed to fight the allergens. Environmental stress and food additives are also seen as taxing the ductless system and depleting its ability to respond to the allergens.

Sieben (1977), a neurologist, speaks out forcefully for the strict men of science who desire statistical significance. He takes on each of the above theories and cites all the groups that have spoken out against each theory after having been unable to substantiate its claims. The strength and totality of this critique nearly negates the need to read the rebuttal printed in the same journal by Wunderlich (1977).

Wunderlich comes to the defense of the non-statistical observers as being good right-brain thinkers while Sieben, for his strict scientific approach, is accused of only using left-brain thought. Wunderlich then observes that there needs to be room for both right- and left-brain thinking or new progress will never occur.

School Adjustments

In studies of the school population, the estimate of allergic children in school was placed at 10 percent in 1970 by Barkin and McGovern and at 20 percent in 1960 by Rapaport and Adler.

The type of problems that children are reported to have from allergic conditions that affect their schooling are numerous.

Stuffy, runny, or itching nose with sniffing, sneezing, snorting, hacking; persistent cough and wheezing; itching, watering, and burning eyes; rashes; vomiting; intestinal cramps; recurrent headaches; tension-fatigue; and mouth breathing are some of the symptoms cited (McGovern, Pierce, & Lee, 1971) as interfering with school progress of the allergic child. "The Allergic Index" was compiled by Rapaport and Adler (1960, pp. 180-84). McGovern et al. (1971) also discuss environmental considerations that need to be made in the school to accommodate the allergic children: (1) Special care should be taken to select carpets and pads that are constructed of allergy-free materials. (2) Air-conditioning systems, when present, should be cleaned on a regular basis. (3) Dust from chalk, gym mats, library books, and playgrounds must receive regular attention and be kept at minimal levels. (4) Mold from plants, fish tanks, school showers, and gym mats can also cause problems for students and needs to be eliminated as much as possible. (5) Playgrounds and adjacent areas need to be treated for weeds and insects that could be problems for the students.

Exercise Problems

Allergic children need exercise as much as, or more than, normal children, but problems such as exertion-induced asthma make it necessary to proceed with some care. McGovern et al. (1971) and Ghory (1974) point out that a short exercise period helps to clear airway obstruction, while prolonged exercise increases airway obstruction. Ballard (1976) observes that some children may push themselves and become abnormally tired, thinking that everyone gets

equally tired from exercise. Current recommendations in the control of exercise for asthmatic children--which can apply to other allergic children with exercise problems--is five minutes of exercise followed by five minutes of rest in a rotated series that fills the gym or play period (Ghory, 1974).

Alertness Problems

Allergic children are viewed as slow or dull more frequently than non-allergic children even though there is no significant difference in ability. They are also more frequently seen as being in need of punishment than the non-allergic children (Rawls, Rawls, & Harrison, 1971). Ghory (1974) notes that many of the school-related problems of chronically ill children result from rigidity and lack of understanding by school teachers. Communication with parents and physicians would promote better management of allergic and asthmatic children.

In a study by the Association for the Education of Young Children (Townsend-Moller, 1977), the suggestion is made that a training orogram for teachers needs to be developed to cover areas of imperceptible handicaps of which allergy is a part.

Current Writings

Current trends in relevant literature build on the debates of the late 1970s. Heavy emphasis is being placed on nutrition, which is what would be predicted from the forceful writings of Smith (1976), Wunderlich (1970, 1972, 1973, 1977), Pauling (1970), and Feingold (1975). Many current writers, however, are citing the above sources as their authorities rather

than doing new research in the area.

Case Studies

The majority of new literature on allergy seems to consist of much duplication through the citing of case studies. Multiple case studies lack the controls to provide convincing proof even though they sound plausible. For example, the photographs presented with an article by Eby and Jetton (1972) are impressive; but, since this is the only case of fiberglass allergy reported to date, it leaves one wondering if some other irritant might not have been the offending agent. Noonan (1977), by using a multiple approach, is also able to generate considerable information from a case study of one child with numerous suspected allergies. Even though positive results were attained, how can there by any certainty the results were from the manipulations of the environmental factors, and if so, one or all?

Leon (1978) discussed in her model program fifty categories of problems. A multiple approach was used with videotaping to serve as the proof of changes. While Leon stressed allergy testing, she manipulated too many factors to say any one item had been the factor that made the change.

Von Hilsheimer (1974) cites a "blond-allergic syndrome" that was repeated by Smith (1976) but without convincing mathematical or statistical support. Wunderlich (1973b, p. 29) also cites a single case study for supportive proof of his position of allergy being responsible for the abnormal blood sugar found in a woman who clinically returned to normal after allergy shots.

Literature on Methodology of Seminars

Inservice Seminars

Inservice education literature is fairly broad. An attempt to focus on the seminar or workshop method is made the primary consideration, but the inclusion of some more general inservice literature seems unavoidable. The contributions to inservice education literature have been quite erratic. Ben Harris (1980) pulled together a historic overview of the existing literature at the time of his publication. He indicated the extensive writings in 1940 by Barr, Burton, and Bueckner noting: "These writers emphasized a vast array of 'improvement devices'. This emphasis on process, procedure, and techniques was magnified by the extensive effort of social psychologists and educators responding to post-World War II demand for inservice methodology" (Harris, 1980, p. 27).

Inservice seminars are for the purpose of growth on the job. Harris, Bessent, and McIntyre (1969) tied the seminar closely to supervision and seemed to imply it as an extension or part of supervision. They stated that inservice was important for the four following reasons:

1. Pre-service preparation of professional staff members is rarely ideal and may be primarily an introduction to professional preparation rather than professional preparation as such.
2. Social and educational change makes current professional practices obsolete or relatively ineffective in a very short period of time. This applies to methods and techniques, tools and substantive knowledge itself.
3. Coordination and articulation of instructional practices require changes in people. Even when each instructional staff member is functioning at a highly professional level, employing an optimum number of the most effective practices, such an instructional program might still be relatively uncoordinated from subject to subject and poorly articulated from year to year.

4. Other factors argue for inservice education activities of rather diverse kinds. Morale can be stimulated and maintained through inservice education, and is a contribution to instruction in itself, even if instructional improvement of any dynamic kind does not occur. (Harris, et al., 1969, pp. 3-4)

Ben Harris (1980, p. 14) further elaborated on point number two above, citing change in technology and time as the factor that erodes competence. Old competencies become obsolete and gaps develop in capabilities to perform desired teaching functions when teachers do not stay abreast with change.

In view of the change process that is constantly taking place, a systematic plan needs to be in place to keep teachers abreast in a predictable manner. Harris et al. (1969) discussed what had gone wrong with inservice training over the years that led to generally negative responses from teachers, and unionized demands for greater relevance. The shortcomings listed were:

1. Not relating staff needs to inservice program
2. Not selecting relevant activities for program plans
3. Not implementing inservice activities with resources and sufficient staff for effectiveness
4. Not having enough planning done by staff
5. Not polling staff satisfactorily for needs and interest
6. Not allowing for individual differences
7. Not evaluating a program while in progress or when it is finished to establish how it can be improved
8. Overuse of good material
9. Poor development of activities
10. Following established trends that have lost appeal
11. Ignoring important parts of program design (pp. 4-6).

Don Davis prepared a paper for the U. S. Senate Committee on Education in 1967. He stated that inservice training was the "slum" of education (Davis, cited by Harris, 1980, p. 30). The Federal Government has attempted to make some advances in improving inservice. In the Education for the Handicapped Act, Public Law 94-142, Congress wrote specifications for inservice training for those working with special children. Teachers' organizations, however, in response to teacher demands, lobby against legislated inservice requirements primarily because of what are seen as abuses.

Two research projects were conducted on the inservice process (Anderson, 1977; Glenn, 1977). Each was designed as a minicourse (or seminar) which offered university credit for teachers. The researchers' minicourse material given the teachers was really irrelevant to the research of inservice processes, which was the researchers' interest. The university credit may have served to hold their subjects for analysis. While both may have offered quality minicourses and informed teachers as to the purpose of their projects, their reports of their projects leaves one believing otherwise. The researchers gave the impression that they had lured unsuspecting teachers into their counting chambers, taken measurements, and discarded the teachers without them being the wiser. "Aspects of Nonformal Education in the Pacific Region" (1982) alludes to this as "hidden curriculum." The idea that something more than the superficial minicourses was happening without the teachers' full understanding and consent seems questionable in terms of ethics even for research--if that is indeed what happened in these

courses. The studies otherwise seemed to have made some interesting contributions.

Another study (Holt, 1976), that from the report seemed to have been well intentioned, well planned, and very scholarly in organization, leaves one wondering how much application of adult learning principles had gone into the presentation of the topic of "andrology." The voluntary audience dropped from twenty-four at the start of the inservice series to six at the end six weeks later.

Inservice seminars need to be highly relevant, performance related, and interesting in order to retain teacher involvement (Harris, 1980, p. 7). Harris stated: "Obviously, outcomes are less than fully desirable if they are not highly job related or are not concerned with performance change" (ibid., p. 11).

Kindervaller (1978) conducted a learner-centered workshop in which she made a study of adult learning principles. She generated some general concepts about adult learning as well as citing other recent studies in the area. She indicated that children and adults approach learning differently. Adults relate the new learning to already existing frames of reference and look for more immediate types of application. Her learner-centered approach to adult-education inservice training involved the following:

1. Presentation of learning materials from the perspective of the learner.

2. Promotion of active participation by the learner in the learning experience.

3. Material which posed a problem to be solved by the learner.

4. The need for the teacher to play the role of facilitator.

5. Promotion of cognitive learning to elicit new behavior (Kindervaller, 1978, p. 7).

Kindervaller further indicated that adult learners differed from the child learner in the following ways: The adult

1. Is self-directed

2. Has a larger reservior of experience with which to relate to new learning

3. Is oriented to developmental tasks of a perceived social role

4. Looks for immediate application of new learning

5. Has shifted from subject-centered to problem-centered learning (p. 10).

With these differences in learning, she saw traditional classroom models as inappropriate for adult learning (p. 20).

Ben Harris (1980, p. 11) was not completely in agreement with the self-directed concept advanced by Kindervaller. He also indicated a need for intervention and redirection in adult learning. Without redirection, the individual may become very focused and narrowed in training as time progresses. This is implied in the third of Kindervaller's differences of adult learning above. Frequently, individuals will not address themselves to important aspects of their environment. They view it as someone else's responsibility. Resistance to new learning outside the perceived social role is also implied in this learning difference. Areas outside the perceived social role may also be lacking apparent applications for the adult learner. This aspect of a problem-

centered approach needs to be met as part of the redirection in adult learning.

Kindervaller (1978) indicated that adult self-directed behavior comes about from a combination of self-reliance and a need to reach happiness, which is apparently a homeostatic condition met by going through the several steps:

1. Recognizing personal potential
2. Identifying problems and causes
3. Gathering information on alternatives
4. Selecting the most acceptable alternatives
5. Making temporary adjustments to inferior choices when necessary
6. Rationalizing choices to self
7. Accepting consequences of personal actions (p. 8).

Ben Harris (1980) indicated that inservice is good if

1. New situations are arranged
2. It is a cognitive activity
3. It is highly positive
4. Sequence is correct in timing
5. Frustrations and confusion are eliminated
6. Interaction keeps it relevant to participants
7. Decisions on selections are logical and orderly (p. 9).

"Aspects of Nonformal Education in the Pacific Region" (1982, pp. 61-63) gives ten lessons learned from conducting workshops.

1. Five uses for workshops include:

A. Learning how to design and manage a workshop

B. Covering hidden curriculum

C. Learning how the transfer of power develops

D. Developing self-reliance

E. Developing various behavioral skills, to include: chairing, reporting, manning, leading, and speaking to large groups.

2. Workshops are temporary organizations whose control shifts from the sponsor to its community.

3. Workshop success is determined by nature, location, time scale, ease of involving participants, associated learning, and needs or values of the participants.

4. The shift of power in a workshop is away from status, bureaucrats, sponsors, and formal qualification towards non-directive, non-sexist, natural leaders.

5. Evaluation involves some formating to determine:

A. Value of the subject matter

B. Nature of the learning (i.e., knowledge, concepts, skill)

C. Composition of the group

D. Skill of management.

6. Participants learn workshop processes.

7. Participants develop self-management.

8. Transfer of power to participants is expected by fourth day.

9. Shift of philosophy is to that of the natural leaders of the participant group.

10. Participants get prime time for involvement.

Types of Design

Seminars or workshops can range from very brief minicourses to courses taking many days. Minicourses may be taped or videotaped to cover small units. Harris (1980, p. 107) indicated that in Philadelphia 1800 teachers signed up on a voluntary basis when given fifty-eight choices of courses ranging from one and a half to eight hours in length. Greater success in acceptance is noted when the miniseries is polished and professional than when it is amateurish and unsophisticated.

Timing of Seminars

Inservice should be included in the regular working schedules of teachers and not as an extra or add-on after school or weekends on the teachers' personal time (Reilley, 1982).

Size of Seminars

A recommendation for limiting workshop size when hands-on materials are used was found in The Subject Access Problem--Opportunities for Solution: A Workshop (1978): This workshop was designed to train librarians to better meet the needs of their patrons and, due to the nature of the hands-on materials, suggested a limit of not more than thirty-five for the size of each workshop group.

Seminar Development

In development of a workshop or seminar the planner must first develop the concepts of the subject he wishes to cover (Harris, 1980, p. 45). The methods used to cover the desired subject matter

will, in part, be determined by the philosophy of the planner. Then, objectives need to be set which will, in part, start to define activities and materials that will be needed (Harris, 1980, p. 47).

Planning

To ensure a well-run seminar, planning needs to be extensive, covering as much detail as can be anticipated in the planning stage. Harris (1980, pp. 95-96) gives seven reasons for planning:

1. Management of time
2. Personnel management
3. Written communication
4. Coordination and sequencing of events
5. Provision for non-routine requirements
6. Inclusion of originality by participants
7. Evaluation

Phases of planning include:

1. Identification of need
2. Determination of specific target
3. Determination of basic resources
4. Determination of effective grouping or formating
5. Developing specific program plans
6. Completion of preparations
7. Implementation of the seminar
8. Conducting the evaluation (ibid.)

Documents for a Seminar

The documents for a seminar include all the written plans and preparations that are necessary. Harris (1980, p. 66) suggested the following documents:

1. Agenda
2. Checklist of preparations and arrangements
3. Flow chart of events
4. Checklist of materials
5. Evaluation instrument

Wood (1981) provided an extensive list of documents that he felt were needed to run seminars. His list covered descriptive goals, calendar of events, descriptions of personnel needed, descriptions of population to be served, descriptions of format, strategy and approach, lists of resources, evaluations, and methods of monitoring the entire program.

Dornant and Byers (1981) also suggested the development of pre-workshop packets to increase the effectiveness of a workshop. This could be a form of advanced organizer when desired. This type of advanced organizer, however, could interfere with measurement of an evaluation process. The planning documents can be checked for balance of material, balance of activities, productiveness of routines, creativity, innovations, and stimulation. The written documents of a seminar help to set some standard procedures if it is repeated or is being given by more than one person.

Leadership Role

In a workshop or seminar the sponsor is the initial leader: he sets the stage for the desired sequence of events, states the objective of the occasion, and decides what evaluation procedures will be followed.

Beers (1978), in his workshop for Alaskan "bush" teachers, makes some interesting observations on the necessity of methods being relevant for the population. He observed that Alaskans were very much visually trained in early learning experience and were also very intense on given projects for short periods of time. He saw both characteristics as demanding necessary adjustments to better accommodate the Alaskan "bush" population. These leadership types of responsibilities to accommodate learning modes are part of planning.

The leader has the responsibility of keeping materials and activities relevant to the thrust of the seminar and the participants. Beers found that drawing from crafts and skills needed in his unique population served him better in integrating his curriculum to community life and making it a cognitive event.

Role of Participants

Harris et al. (1969) stressed the laboratory approach throughout the major portion of their book. This is in keeping with adult learning principles and multisensory approaches.

"Measurement of Affect and the Humanizing of Education. Part III, Workshop and Procedures for Working with Schools, Final Report of the Interstate Educational Resource Service Center Affective Education Project" (1973) stated that workshop participants

are expected to assume an active decision-making role. That role pertains to their needs, anticipated problems, formulation of plans, use of time, completion of task, or generating of more relevant tasks.

With assumption of the decision-making role comes verbal interaction. The verbal interaction, if focused on the workshop objectives, is desirable. Unrelated communication, however, can erode the workshop or seminar unless the participants are covertly redirected. A covert redirection, when needed, suggested Reilley (1982), is calling for a general "stop action" at which time the sponsor-leader goes through a review of the objectives jointly with the participants. If a workshop is prolonged, the sponsors of the workshop should be able to fade into a non-directive role as the natural group leaders emerge. This allows the sponsors to take more facilitory roles as resource persons or coaches.

Feedback

Open communication can serve as a monitoring factor to check concept transmission from sponsor to participant. Use of illustrations needs to be balanced between maintaining interest and clarification of points and used jointly whenever possible. Humorous anecdotes are frequently used purely as attention devices and give the leader an opportunity to observe by their laughter the participants' involvement.

Evaluation

The final responsibility of determination of impact on the target population rests with the initiator of the workshop. He must decide if his objectives were met and if it is worth repeating for subsequent groups. Things to be evaluated can be methods, attitudes, content, presenter-leader performance, relevance, materials, timing, etc.

Smith (1974) suggested a three-questionnaire approach to evaluate: (1) Attitude, (2) Content, and (3) Delayed recall. Holt (1976) refrained from the use of pretest in his study fearing that any form of pretest could prove to be an advanced organizer. Follow-up studies at desired intervals are necessary to appraise the long-term effects of a seminar.

Summary

This chapter reviewed the literature on allergy as it pertains to: early history, asthma, headaches, dietary management, school adjustments, exercise problems, allertness problems, current writings, and case studies. Additionally, literature pertaining to methodology concerning: inservice seminars, types of design, timing of seminars, size of seminars, seminar development, planning, documents for a seminar, leadership role, role of participants, feedback, and evaluation was also discussed.

CHAPTER III

RESEARCH DESIGN

This chapter contains a statement as to the type of research, description of population and sample, seminar, initial instrument development, pilot study, instrument refinement, procedures, null hypotheses, and statistical analysis used in this study.

Type of Research

The research was experimental, involving the development and administration of a seminar, and evaluation of its effectiveness using an objective questionnaire.

A Randomized Solomon Four-Group Design was used. The teachers were assigned to the groups randomly by schools rather than by individual to prevent contamination between treatment and non-treatment groups.

Sample Used for the Study

The sample used for the study were teachers in three school districts in Shiawassee County which have a population of 51,000. As one purpose of the study was to perform a community service in the researcher's community, a deliberate selection was made of three school districts which contained an adequate number of teachers for the study. The teachers in these three districts formed the sample.

The school districts included in the study were: Perry,

which is located along a major highway with good accessibility to the urban areas of Lansing--and is closest to Lansing of the three districts composing the sample--and Flint, Michigan; Corunna, which is close to Owosso and has moderate accessibility to the same major urban areas; and Chesaning, which is more remotely situated and has the poorest accessibility to the major urgan areas of Flint and Saginaw. The accessibility to urban areas may have affected the pretest scores which seem to decline going away from the urban areas.

The Randomized Solomon Four-Group Design was used for the study. The school districts were assigned to the four groups, not randomly, but according to the willingness of the superintendents.

Group I--Pretest-Seminar-Posttest--one-half of Corunna Schools

Group II--Seminar -Posttest--one-half of Corunna Schools

Group III--Pretest -Posttest--Perry Schools

Group IV -Posttest--Chesaning Schools

In hypotheses 7 to 15, groups I and II are referred to jointly as the combined seminar group, and groups III and IV are referred to jointly as the combined control group. In these same hypotheses groups I and II are referred to jointly as the combined group which had the pretest; and groups III and IV are referred to jointly as the combined group which had no pretest.

Description of Seminar

The seminar was comprised of lecture materials with visual aids presented in transparency form on an overhead projector. All

teachers were given opportunity to examine the contents of a bee sting kit. An open discussion of its use was held, complete with mock practice of administration of a shot to a rubber ball. Mock practice and discussion were also conducted on the handling of a medical emergency of anaphylaxis.

Teachers were asked frequently to give relevant illustrations from their classroom experiences. This proved to be a good attention holding device in addition to keeping them physically active. Humorous observations and illustrations were used, as time and materials permitted, while still retaining a high quality of professionalism in the presentation.

The complete text for the seminar, including visual aids, is in appendix A.

Initial Instrument Development

A product of the review of relevant literature was Murray Dworetzky's Allergy and Hypersensitivity: A Programmed Review for Physicians and an instrument for measurement that had been developed by Pfizer Drug Company (1964). This text and instrument served as a model for the assembling of new, up-to-date materials and a general organization of the materials to develop a meaningful seminar that was not overly technical.

As the questions were not usable in their initial form, a systematic attempt was made to match them for general content in a multiple-choice format. Additional questions were added to measure the classroom-adjustment concepts given in the seminar and to include the symptoms of allergy.

From the seminar literature a set of thirty multiple-choice questions was generated to cover the scope of the material. The initial instrument appears in appendix B. The test was given to ten medical doctors in the Owosso, Michigan, community for their answers and critiques. All ten doctors completed the forms and returned them within two days, but only one offered any critique. He felt that question 2 was too finely discriminating which led to its removal.

Following the pilot study described below, the scores of the ten doctors were compared to scores of ten teachers by an independent t-test. The test differentiated the medically trained respondents (medical doctors) from the medically untrained (teachers) at a level of significance, $p < .000005$.

Pilot Study

A pilot study was conducted with a group of ten teachers from Adelphian Academy, Holly, Michigan. First, a pretest was administered. This was followed by a presentation of the seminar material and a posttest follow-up. The pretest scores ranged from eight to fifteen with a mean score of twelve. Posttest scores ranged from nine to twenty-two with a mean score of 17.1. To compare pretest and posttest means, a correlated t-test was used. This yielded $t = 4.92$ with $p = .00082$. Thus there was a significant pretest to posttest gain. The teachers, however, did not attain a posttest mean equal to the doctors' test mean, as shown above.

Instrument Refinement

The purpose of the seminar was to develop new knowledge abilities in the teachers. For this purpose a criterion-referenced test, rather than a norm-referenced test, is required. It is to be expected that most subjects will make a low score before the seminar and a relatively high score following the seminar. Item-analysis procedures for development of such a test do not, therefore, use the traditional procedures for norm-referenced tests, such as coefficient-alpha reliability and point-multiserial correlation, which are based on a wide variance of scores. The procedure selected for this purpose was to select items which discriminate successfully between the trained and the untrained.

Table 1 shows this item analysis for each item. The number of trained doctors (D) and untrained teachers (T) who selected each of the five responses (A, B, C, D, E) is shown. The correct response is indicated by an asterisk.

Based upon the item analysis, four further items were eliminated. These were: Question 23 and 25 which was selected by more teachers than doctors as the correct response; questions 19 and 21, which showed no differentiation between teachers and doctors, specialist or general practitioner. Question 2 had been eliminated earlier because of a medical doctor's critique; and questions 9 and 20 were left in because the doctors with specialist training in internal medicine and pediatrics answered correctly while the non-specialized doctors did not. The refined instrument is shown in appendix D.

TABLE 1

ITEM ANALYSIS OF PILOT TEST QUESTIONS
RESPONSE SELECTION

		A	B	C	D	E
1	D	0	5	5	0	0
	T	1	7	0	1	1
Total		1	12	5*	1	1
2	D	3	0	7	0	
	T	1	2	6	1	
Total		4	2	13*	1	
3	D	0	10			
	T	2	8			
Total		2	18*			
4	D	2	6	2		
	T	2	1	7		
Total		4	7*	9		
5	D	1	8	0	1	
	T	1	7	1	1	
Total		2	15*	1	2	
6	D	0	0		10	
	T	3	2		5	
Total		3	2		15*	
7	D	0	0	10		
	T	1	2	7		
Total		1	2	17*		
8	D	6	0	0	4	
	T	5	2	1	2	
Total		11*	2	1	6	
9	D		1	2	1	6
	T		2	2	0	6
Total			3	4	1	12*
10	D	1	5	1	3	
	T	1	3	3	3	
Total		2	8*	4	6	
11	D	1	1		1	7
	T	3	0		5	2
Total		4	1		6	9*

TABLE 1--Continued

		A	B	C	D	E
12	D	0	7		3	
	T	4	2		4	
Total		4	9*		7	
13	D	0	6	2	2	
	T	3	5	1	1	
Total		3	11*	3	3	
14	D	0	3	0	7	
	T	3	1	2	4	
Total		3	4	2	11*	
15	D	1	1	0	3	5
	T	1	0	1	4	4
Total		2	1	1	7	9*
16	D	0		0	10	
	T	1		5	4	
Total		1		5	14*	
17	D	1	7	0	2	
	T	3	0	5	2	
Total		4	7*	5	4	
18	D		0		10	
	T		3		7	
Total			3		17*	
19	D	5			5	
	T	5			5	
Total		10*			10	
20	D	3	2	4	1	
	T	4	1	4	1	
Total		7	3	8*	2	
21	D	0		5	5	
	T	3		2	5	
Total		3		7	10*	
22	D			2	8	
	T			9	1	
Total				11	9*	
23	D	4	3	2	1	
	T	2	4	4	0	
Total		6	7	6*	1	

TABLE 1--Continued

		A	B	C	D	E
24	D	0	1		9	
	T	2	2		6	
Total		2	3		15*	
25	D	5		2		3
	T	4		2		4
Total		9		4		7*
26	D	0	10	0	0	
	T	2	3	3	2	
Total		2	13*	3	2	
27	D	10	0			
	T	9	1			
Total		19*	1			
28	D	0	0	10	0	
	T	1	4	4	1	
Total		1	4	14*	1	
29	D	0	2	2	6	
	T	3	0	2	5	
Total		3	2	4	11*	
30	D			10	0	
	T			8	2	
Total				18*	2	

D = Doctor Selection
T = Teacher Selection
* = Correct Selection

Procedure

The ideal procedure would have been one seminar with half of the research group coming in after the pretest. In the world of people, however, ideal is not always possible. The control tests, likewise, ideally would have been given at the exact same time as tests in the research group.

In an effort to come close to meeting ideal conditions, the

tests were delivered to superintendents in Perry and Chesaning the day before their administration was desired and picked up the day after. The superintendents took the responsibility for administration at the desired time after school. The seminars were clustered as close together as school time tables would permit. It would have been desirable to use a delayed recall test after a few weeks. However resistance from the teachers' union caused the superintendent to prohibit it from the onset.

Null Hypotheses and Statistical Analysis

Eighteen null hypotheses were stated for statistical testing.

1. The posttest mean of the seminar group on knowledge of allergies will not be significantly greater than its pretest mean.

2. The posttest mean of the seminar group on the knowledge of classroom adjustments for allergies will not be significantly greater than its pretest mean.

3. The posttest mean of the seminar group on symptom recognition will not be significantly greater than its pretest mean.

4. The posttest mean of the control group on knowledge of allergies will not be significantly greater than its pretest mean.

5. The posttest mean of the control group on knowledge of classroom adjustments for allergies will not be significantly greater than its pretest mean.

6. The posttest mean of the control group on symptom recognition will not be significantly greater than its pretest mean.

Hypotheses 1 to 6 were tested by the t-test for means of correlated samples.

7. The posttest mean of the combined seminar group on knowledge of allergies will not be significantly different from the posttest mean of the combined control group.

8. The posttest mean of the combined group which had the pretest, on knowledge of allergies, will not be significantly greater than the posttest mean of the combined group which had no pretest.

9. There will be no significant interaction between treatment (seminar) effect and pretest effect with respect to knowledge of allergies.

Hypotheses 7 to 9 were tested by two-way Analysis of Variance, with treatment (seminar/no seminar) as one factor, and pretest or absence of pretest as the other factor.

10. The posttest mean of the combined seminar group for knowledge of classroom adjustment for allergies will not be significantly different from the posttest mean of the combined control group.

11. The posttest mean of the combined group which had the pretest, for knowledge of classroom adjustment for allergies, will not be significantly greater than the posttest mean of the combined group which had no pretest.

12. There will be no significant interaction between treatment (seminar) effect and pretest effect with respect to knowledge of classroom adjustment for allergies.

Hypotheses 10 to 12 were tested in the same manner as hypotheses 7 to 9.

13. The posttest mean of the combined seminar group for

symptom recognition will not be significantly different from the posttest mean of the combined control group.

14. The posttest mean of the combined group which had the pretest, for symptom recognition, will not be significantly greater than the posttest mean of the combined group which had no pretest.

15. There will be no significant interaction between treatment (seminar) effect and pretest effect with respect to symptom recognition.

Hypotheses 13 to 15 were tested in the same way as hypotheses 7 to 9.

16. There will be no significant difference between the means of the seminar group and the control group on posttest scores of knowledge of allergies, when adjusted for pretest scores.

17. There will be no significant difference between the means of the seminar group and the control group on posttest scores of knowledge of classroom adjustment, when adjusted for pretest scores.

18. There will be no significant difference between the means of the seminar group and the control group on posttest scores for symptom recognition, when adjusted for pretest scores.

Hypotheses 16 to 18 were tested by one-way analysis of covariance, with posttest scores as criterion, and pretest scores as covariate. Analysis of covariance compares the posttest means as regression analysis predicts they would be if the pretest means were equal. These predicted means are said to be "adjusted for the pretest." For all hypotheses tested, alpha was set at .05.

CHAPTER IV

ANALYSIS OF THE DATA

Observations

This study was originally conceived as a series of presentations; but, when the various school districts were approached emphasis by all was on time limitation. A total of forty-five minutes to an hour and a quarter for the participation of their teachers, as well as a high level of relevance, were desired. This posed some need to compromise detailed completeness for quick overview and limited measurement, and still try to maintain quality.

Teacher resistance was minimal but still noticeable by comments, primarily directed at the fact that complicated medical concepts were involved that were beyond the scope of their training. Resistance was the highest in the control group with pretest and posttest. In the main experimental group, resistance was most noticeable between pretest and seminar. There was noticeable change in attitude upon conclusion of the seminar and posttest across all experimental group schools. The project seemed most well received, upon conclusion, in the seminar-posttest group, in spite of the unexpectedly poor results in one part of that group.

It was very interesting, during this research project, to note that the administrators were unwilling to commit more than a total of an hour or an hour and a quarter of staff time for the

research to be carried out. This necessitated a short questionnaire and a very brief presentation. Administrators also voiced considerable concern about the quality, appeal, and relevance of the material. The administrators are very sensitive as repercussions are common when teachers feel that an inservice training session has been a waste of time.

Seminars were held and data gathered October 25-29, 1982.

Basic Data

Table 2 shows the means of all groups on the posttest and the pretest (where taken) for all three content areas.

The change in scores from pretest to posttest in both the seminar and control groups seems to indicate that there was a significant learning experience that took place in the seminar group in all three areas of knowledge of allergies, classroom adjustments for allergies, and symptom recognition of allergies. The scores of the control group do not reflect the same learning experience taking place in their group during the time frame of the research study.

Testing the Hypotheses

Hypotheses 1 through 15 are presented in groups for ease of discussion, while hypotheses 16 to 18 are presented and discussed individually. The analysis of the data is preceded by a restatement of the hypotheses in the null form. A .05 level of significance was established as the level at which to retain or reject the null hypothesis.

TABLE 2

GROUP MEANS ON THE THREE VARIABLES

Variables	Seminar				Control			
	Group 1 N = 47		Group 2 N = 45		Group 3 N = 45		Group 4 N = 49	
	Pretest $\bar{X}$	Posttest $\bar{X}$	Pretest $\bar{X}$	Posttest $\bar{X}$	Pretest $\bar{X}$	Posttest $\bar{X}$	Pretest $\bar{X}$	Posttest $\bar{X}$
Knowledge of Allergy	9.192	16.149	--	11.889	12.222	12.0667	--	10.347
Knowledge of Classroom Adjustments	2.1489	3.0851	--	2.178	2.7111	2.4889	--	2.260
Symptom Recognition	2.2766	3.9362	--	3.022	2.2889	2.53333	--	2.110

Hypotheses 1 to 6

1. The posttest mean of the seminar group on knowledge of allergy will not be significantly greater than its pretest mean.

2. The posttest mean of the seminar group on the knowledge of classroom adjustments for allergies will not be significantly greater than its pretest mean.

3. The posttest mean of the seminar group on symptom recognition will not be significantly greater than its pretest mean.

4. The posttest mean of the control group on knowledge of allergy will not be significantly greater than its pretest mean.

5. The posttest mean of the control group on knowledge of classroom adjustments for allergies will not be significantly greater than its pretest mean.

6. The posttest mean of the control group on symptom recognition will not be significantly greater than its pretest mean.

For statistical analysis, the first six hypotheses were studied independently. As a test of significance, the correlated t-test analyses were undertaken. The first three hypotheses were rejected. Hypotheses four to six were retained. There was a significant pretest to posttest gain for the seminar groups but not for the control groups, in each of the three content areas.

Hypotheses 7 to 9

7. The posttest mean of the combined seminar group on knowledge of allergies will not be significantly different from the posttest mean of the combined control group.

8. The posttest mean of the combined group which had the pretest, on knowledge of allergies, will not be significantly greater

TABLE 3

POSTTEST-PRETEST MEANS
HYPOTHESES 1 TO 6

	Pretest $\bar{X}$	Posttest $\bar{X}$	Difference	T	P
Seminar Group Knowledge of allergy (Hyp. 1)	9.192	16.149	6.957	14.161	<.0005
Seminar Group - Knowledge of Classroom adjustments (Hyp. 2)	2.1489	3.0851	.9362	5.0328	<.0005
Seminar Group Symptom recognition (Hyp. 3)	2.2766	3.9362	1.6596	6.9143	<.0005
Control Group Knowledge of allergy (Hyp. 4)	12.2222	12.0667	-.1556	-.3619	.719
Control Group - Knowledge of Classroom adjustment (Hyp. 5)	2.7111	2.4889	-.2222	-1.2010	.236
Control Group Symptoms recognition (Hyp. 6)	2.2889	2.5333	.2444	1.1846	.243

than the posttest mean of the group which had no pretest.

9. There will be no significant interaction between treatment (seminar) effect and pretest effect with respect to knowledge of allergies.

Table 4 shows cell means, treatment means, and means for pretest effect based upon the posttest scores. The seminar group appear to have scored higher than the control group.

TABLE 4

KNOWLEDGE OF ALLERGIES
POSTTEST MEANS
HYPOTHESES 7 TO 9

Levels of Seminar	With Pretest 1	Without Pretest 2	Overall Means for Seminar Effects
Seminar 1	47 16.149	45 11.889	14.065
Control 2	45 12.067	49 10.347	11.170
Overall means for pretest effects	14.152	11.085	

This Solomon four-group design calls for analysis by a two-factor analysis of variance with one factor being the treatment (seminar) and the other factor the presence or absence of pretest.

Analysis of variance for the data is shown in table 5. The treatment effect is significant ($p < .00005$); hypothesis 7 was rejected. The pretest effect is significant ($p < .00005$); hypothesis 8 was rejected. In addition, however, hypothesis 9 was rejected. There was significant interaction between pretest

and seminar (p = .0233). Because of the interaction, simple effects must be considered. That is, the seminar effect must be considered separately for those two groups who had the pretest and for the two groups who did not have the pretest. Likewise the pretest effect must be studied for the two seminar groups separately.

TABLE 5

KNOWLEDGE OF ALLERGIES
ANALYSIS OF VARIANCE
HYPOTHESES 7 TO 9

Source	DF	Sums of Square	Mean Square	F-Ratio	Probability
Seminar effect	1	363.962	363.962	24.881	< .00005
Pretest effect	1	411.657	411.657	28.142	< .00005
AXB interaction	1	74.917	74.917	5.121	.0233*
Error	183	2662.312	14.628		
Total	186				

*P < .05

The results of the tests for simple effects are shown in table 6. It is noted that there are significant F ratios for both seminar and pretest effects. That is whether or not a pretest was given, the seminar group posttest mean was significantly higher than the control group posttest mean. Hence, hypothesis seven is rejected. Additionally, it may be noted from the table that the pretest did have a potent effect upon the scores of both seminar and control group. Hence hypothesis 8 is rejected.

TABLE 6

KNOWLEDGE OF ALLERGIES
SIMPLE EFFECTS ANOVA
HYPOTHESES 7 TO 9

Effects	DF	MS	F	P
Seminar, for those who had pretest	1	383.062	26.19	< .0005*
Seminar, for those without pretest	1	55.78	3.81	.049*
Pretest effect, for those who had seminar	1	417.20	28.52	< .0005*
Pretest effect, for those without seminar	1	69.397	4.74	.029*
Error	183	14.628		

*P < .05

Hypotheses 10 to 12

10. The posttest mean of the combined seminar group for knowledge of classroom adjustment for allergies will not be significantly different from the posttest mean of the combined control group.

11. The posttest mean of the combined group which had the pretest, for knowledge of classroom adjustment for allergies, will not be significantly greater than the posttest mean of the group which had no pretest.

12. There will be no significant interaction between treatment (seminar) effect and posttest effect with respect to knowledge of classroom adjustment for allergies.

Table 7 shows cell, seminar means, and means for pretest effect based upon the posttest scores.

TABLE 7

KNOWLEDGE OF CLASSROOM ADJUSTMENT
POSTTEST MEANS
HYPOTHESES 10 TO 12

Levels of Seminar	With Pretest 1	Without Pretest 2	Overall Means for Seminar Effects
Seminar 1	47 3.085	45 2.178	2.641
Control 2	45 2.489	50 2.260	2.369
Overall means for pretest effects	2.793	2.221	

The analysis of variance for these data is shown in table 8. The seminar is not shown as a significant main effect. On first appearance hypothesis 10 is retained and hypothesis 11 rejected. However, hypothesis 12 was rejected. There was significant interaction between pretest and seminar ($p = .0443$), which might be masking a significant main effect. Because of this interaction, simple effects must be considered, that is, the seminar effect must be considered separately for the two groups who had the pretest and the two groups who did not have the pretest. Likewise the pretest effect must be studied for the two seminar groups separately.

The results of the test for simple effect in table 9 show that there was significant seminar effect only for those who had the pretest, but not for those who did not have the pretest. There is a significant pretest effect for the seminar group, but not for the control group. Hypothesis 10 is rejected only for those who

TABLE 8

KNOWLEDGE OF CLASSROOM ADJUSTMENTS
ANALYSIS OF VARIANCE
HYPOTHESES 10 TO 12

Source	DF	Sums of Square	Mean Square	F-Ratio	Probability
Seminar effect	1	2.963	2.963	2.194	.1363
Pretest effect	1	14.797	14.797	10.958	.0015
AXB interaction	1	5.369	5.369	3.976	.0448
Error	183	247.102	1.350		
Total	186				

TABLE 9

KNOWLEDGE OF CLASSROOM ADJUSTMENT
SIMPLE EFFECTS ANOVA
HYPOTHESES 10 TO 12

Effect	DF	MS	F	P
Seminar effect for those who had pretest	1	17.88	13.25	.001*
Seminar effect for those without pretest	1	.159255	.11180	.738
Pretest effect for those who had seminar	1	18.911	14.009	< .0005*
Pretest effect for those without seminar	1	1.2420	.09200	.760
Error	183	1.350		

*P < .05

had the pretest. Hypothesis 11 is rejected only for those who had the seminar; and this may be due, largely, to pretest-seminar interaction.

Hypotheses 13 to 15

13. The posttest mean of the combined seminar group for symptom recognition will not be significantly different from the posttest mean of the combined control group.

14. The posttest mean of the combined group which had the pretest, for symptom recognition, will not be significantly greater than the posttest mean of the group which had no pretest.

15. There will be no significant interaction between treatment (seminar) effect and posttest effect with respect to symptom recognition.

Table 10 shows cell means, seminar means, and means for pretest effect based upon the posttest scores.

The analysis of variance is shown in table 11. Both seminar effect ($p < .005$) and the pretest effect ($p < .0005$) are significant.

Hypothesis 13 was rejected. There is significant seminar effect. The seminar group scored significantly higher than the control group on symptom recognition of allergies.

Hypothesis 14 is rejected. Those taking the pretest scored significantly higher on the posttest than those that did not have the pretest. There is a significant pretest effect.

Significant interaction was not seen, hence hypothesis 15 was retained.

TABLE 10

SYMPTOM RECOGNITION
POSTTEST MEANS
HYPOTHESES 13 TO 15

Levels of Seminar	With Pretest 1	Without Pretest 2	Overall Means For Seminar Effects
Seminar 1	47 3.936	45 3.022	3.489
Control 2	45 2.533	50 2.100	2.305
Overall means for pretest effects	3.250	2.537	

TABLE 11

SYMPTOM RECOGNITION
ANALYSIS OF VARIANCE
HYPOTHESES 13 TO 15

Source	DF	Sums of Square	Means Square	F-Ratio	Probability
Seminar effect	1	62.690	62.690	39.090	.0000*
Pretest effect	1	20.956	20.956	13.067	.0007*
AXB interaction	1	2.694	2.694	1.680	.1935
Error	183	293.487	1.604		
Total	186				

* P < .05

Hypothesis 16

16. There will be no significant difference between the means of the seminar group and the control group on posttest scores of knowledge of allergies, when adjusted for pretest scores.

Table 12 shows, for the seminar and control groups, the pretest mean, the posttest mean, and the posttest mean adjusted for the pretest, on knowledge of allergies.

TABLE 12

MEANS AND ADJUSTED MEANS
KNOWLEDGE OF ALLERGIES
HYPOTHESIS 16

Group	N	Pretest Mean	Posttest Mean	Adjusted Posttest Mean
Seminar	47	9.1915	16.1488	16.9294
Control	45	12.2222	12.0667	11.2514

From table 12 it is evident that the small adjustment for the difference in pretest means has slightly widened the gap between the posttest means of the two groups. Table 13 shows the analysis of covariance for these data.

The probability of .0549 for inequality of slopes indicates that the regression slopes are not significantly different. That is, the assumption of homogeneity of regression is upheld. Analysis of covariance is valid. The probability < .00005 associated with the test of equality of adjusted means indicates that the adjusted group means are significantly different. Hypothesis 16 is rejected. From table 12 it is clear that the seminar group has

TABLE 13

ANALYSIS OF COVARIANCE
KNOWLEDGE OF ALLERGIES
HYPOTHESIS 16

Source	df	Sum of Square	Mean Square	F-Ratio	Probability
Equality of adjusted means	1	581.8113	581.8113	72.4233	< .00005
Error	89	714.9797	8.0335		
Inequality of slopes	1	29.4744	29.4744	3.7837	.0549
Error	88	685.5054	7.7898		

scored significantly higher than the control group when the posttest means are adjusted for difference in pretest means. The seminar has been effective in increasing knowledge of allergies.

Hypothesis 17

17. There will be no significant difference between the means of the seminar group and the control group on posttest scores for knowledge of classroom adjustment.

Table 14 shows, for the seminar and control groups, the pretest mean, the posttest mean, and the posttest mean adjusted for the pretest, on knowledge of classroom adjustments for allergies.

From table 14 it is evident that the small adjustment for the difference in pretest means has slightly widened the gap between the posttest means of the two groups. Table 15 shows the analysis of covariance for these data.

TABLE 14

MEANS AND ADJUSTED MEANS
KNOWLEDGE OF CLASSROOM ADJUSTMENT FOR ALLERGIES
HYPOTHESIS 17

Group	N	Pretest Mean	Posttest Mean	Adjusted Posttest Mean
Seminar	47	2.1489	3.0851	3.1917
Control	45	2.7111	2.4889	2.3776

TABLE 15

ANALYSIS OF COVARIANCE
KNOWLEDGE OF CLASSROOM ADJUSTMENTS FOR ALLERGIES
HYPOTHESIS 17

Source	df	Sum of Square	Mean Square	F-Ratio	Probability
Equality of adjusted means	1	14.3893	14.3893	13.2861	.0004
Error	89	96.3895	1.0830		
Inequality of slope	1	.7607	.7607	.7000	.4051
Error	88	95.6288	1.0867		

The probability of .4051 for inequality of slope indicates that the regression slopes are not significantly different. That is, the assumption of homogeneity of regression is upheld. Analysis of covariance is valid. The probability < .00005 associated with the test of equality of adjusted means indicates that the adjusted group means are significantly different. Hypothesis 17 is rejected. From table 14 it is clear that the seminar group has scored signifi-

cantly higher than the control group when posttest mean is adjusted for difference in pretest means. The seminar has been effective in increasing knowledge of classroom adjustments for allergies.

Hypothesis 18

18. There will be no significant difference between the means of the seminar group and the control group on posttest scores for symptom recognition.

Table 16 shows, for the seminar and control groups, the pretest mean, the posttest mean, and the posttest mean adjusted for the pretest, for symptom recognition of allergies.

TABLE 16

MEANS AND ADJUSTED MEANS
SYMPTOM RECOGNITION OF ALLERGIES
HYPOTHESIS 18

Group	N	Pretest $\bar{X}$	Posttest $\bar{X}$	Adjusted Posttest $\bar{X}$
Seminar	47	2.2766	3.9362	3.9373
Control	47	2.2889	2.5333	2.5321

From table 16 it is evident that the small adjustment for the difference in the pretest means has slightly widened the gap between the posttest means of the two groups. Table 17 shows the analysis of covariance for these data.

The probability of .1677 for inequality of slope indicates that the regression slopes are not significantly different. That is, the assumption of homogeneity of regression is upheld. Analysis

TABLE 17

ANALYSIS OF COVARIANCE
SYMPTOM RECOGNITION OF ALLERGIES
HYPOTHESIS 18

Source	df	Sum of Square	Mean Square	F-Ratio	Probability
Equality of adjusted means	1	45.3981	45.3981	30.1875	<.00005
Error	89	133.8260	1.5037		
Inequality of slope	1	2.8802	2.8802	1.9356	.1677
Error	88	130.9459	1.4880		

of covariance is valid. The probability < .00005 associated with the test of equality of adjusted means indicates that the adjusted group means are significantly different. Hypothesis 18 is rejected. From table 16 it is clear that the seminar group scored significantly higher than the control group when posttest means are adjusted for the difference in pretest means. The seminar has been effective in increasing abilities for symptom recognition of allergies.

Summary

Tests of the hypotheses have revealed a significant seminar effect in all three content areas. While the significant pretest effect must be noted, the seminar effect was significant for both pretest and non-pretest groups, whether studied by t-test, analysis of variance, or analysis of covariance.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter summarizes the research, draws conclusions from the results, and makes recommendations for future research.

Summary

The Problem

Many school children with allergic problems go without treatment because their problems go unrecognized by both their parents and teachers. Even though there may be an awareness on the part of both that some health problem exists neither may view it as important enough to discuss in the valuable and limited time of parent-teacher conferences.

Even if the teacher does recognize the problems she/he may assume wrongly that parents are going to seek treatment for the medical problem, the symptoms of which are so obvious in the classroom. If the teacher is aware, she/he may not take into account the fact that the parent is not knowledgeable about the type of problem that exists and needs medical intervention.

The Purpose

The aim of the study was to increase the teacher's awareness of children's allergic problems; to give teachers the tools to identify the symptoms of allergy; and to adjust the school

environment. Additional aims were to better prepare teachers to consult with parents about their observations and to make referrals to physicians when families need assistance in getting medical help with allergy problems.

Methodology

The population comprised the teachers of three school districts in Shiawassee County, Michigan, which is a predominantly white rural area.

A thirty-item multiple-choice questionnaire was developed and administered to a group of ten physicians. Their scores were compared to the pretest scores of the ten teachers from the pilot group, and significant t-score results were attained.

The pilot study consisted of a pretest, seminar, and posttest. The pretest and posttest scores were compared and significant t-score results were attained. Five questions were dropped from the instrument as they showed no ability to differentiate between the trained and the untrained.

The main study followed a Solomon four-group design. Group I received pretest, seminar, and posttest; Group II received seminar and posttest; Group III received pretest and posttest; and Group IV received the posttest only.

Findings

Knowledge of Allergies

Posttest means for knowledge of allergies were compared to pretest means in the groups that had pretest, by the use of the t-test for correlated samples. The seminar group scored significantly better on posttest than pretest, while the control did not score better.

The posttest mean of the combined seminar group was compared to the posttest mean of the combined control group by analysis of variance. The seminar group scored significantly higher than the control group in knowledge of allergy.

The posttest mean of the combined pretest group was compared by analysis of variance to the posttest mean of the combined groups that had no pretest. The combined pretest group scored significantly higher than the non-pretest group on knowledge of allergy, which is in keeping with the literature on advanced organizers.

Significant seminar-posttest interaction was present, necessitating the study of simple effects rather than main effects. Simple effects tests showed a significant seminar effect for both the posttest group and the non-posttest group. That is, whether or not a pretest was given, the seminar had a significant effect on classroom adjustment for allergies.

The posttest means for knowledge of allergies of the seminar group and the control group were adjusted for pretest scores by analysis of covariance which indicated a significant difference in favor of the seminar group over the control group.

Knowledge of Classroom Adjustments

The posttest means for classroom adjustments were compared to pretest means in the groups that had pretest, by the use of the t-test for correlated samples. The seminar group scored significantly better on posttest than pretest, while the control group did not score better.

The posttest mean of the combined seminar group was compared to the posttest mean of the combined control group by analysis of variance. The seminar group scored significantly higher than the control group in classroom adjustments.

The posttest mean of the combined pretest group was compared by analysis of variance to the posttest means of the combined group that had no pretest. The combined pretest group scored significantly higher than the non-pretest for classroom adjustments, which is in keeping with literature on advanced organizers.

Significant seminar-posttest interaction was present, necessitating the study of simple effects rather than main effects. Simple effects test showed a significant seminar effect for the pretest group only. For the group not having the pretest, the seminar effect was not significant.

The posttest means for classroom adjustment of the seminar group and the control group were adjusted for pretest scores by analysis of covariance which indicated a significant difference in favor of the seminar group over the control group.

Symptom Recognition

Posttest means for symptom recognition were compared to pretest means in the groups that had pretest, by the use of the t-test for correlated samples. The seminar group scored significantly better on posttest than pretest, while the control group did not score better.

The posttest mean of the combined seminar group was compared to the posttest mean of the combined control group by analysis of variance. The seminar group scored significantly higher than

the control group for symptom recognition.

The posttest mean of the combined pretest group was compared by analysis of variance to the posttest mean of the combined groups that had no pretest. The combined pretest group scored significantly higher than the non-pretest group on symptom recognition, which is in keeping with the literature on advanced organizers. Significant seminar-posttest interaction was not present.

The posttest means for symptom recognition of the seminar group and the control group were adjusted for pretest scores by analysis of covariance which indicated significant difference in favor of the seminar group over the control group.

Observations

Throughout the entire project there was noticeable resistance from teachers to becoming involved in a health-related seminar. The pretest was distressing and set off some chatter and humorous jesting. The majority of teachers, however, were attentive and active participants in related exercises. Most of the teachers gave a favorable response upon conclusion of the seminar. The most unfavorable and questioning responses came from the pretest-posttest group in which no seminar was given, which might be anticipated from the literature pertaining to teacher unions opposing inservice projects that do not seem to fit teacher role ideals.

Conclusions and Discussion

With the restricted size and composition of the sample, it is not possible to generalize the results to be representative of

teachers nationally. However, the content of the seminar was such that some extension of the conclusions beyond the sample are possible.

1. The material on allergies is clearly relevant to child behavior in the classroom, and to consequent disciplinary and learning problems. Hence teachers could benefit from such a seminar in the performance of their duties.

2. With the adjustments in vocabulary, the material was presented in a limited time interval. Even with this short presentation, gains were made in knowledge of allergies, knowledge of classroom adjustment, and recognition of symptoms.

3. Initial reactions to the nature of the seminar by the teachers throughout the project demonstrated a resistance to learning about the health problems of their students. This might be overcome by the presentation being designed to conform more closely to teachers' role concepts, particularly in relation to behavioral and learning problems.

4. With the attainment of significance on knowledge of allergies, the teachers not only demonstrated that they might be better informed in this area of children's health but that they could also benefit from a series of presentations to cover a more complete range of children's health problems, including non-allergic classroom problems, such as malnutrition or over nutrition.

5. Feedback received from parents of patients of the pediatricians revealed that the classroom teachers had discussed the content of the seminar with the parents in parent-teacher conferences. This indicated that, after the initial reluctance to

participate, the teachers realized that the seminar had contributed important information and skill.

6. One means to break down this resistance is in the area of advanced organizers. A first session of the seminar could be dedicated to a discussion of behavioral and learning problems. Further sessions could relate allergy or other health problems to these behavioral and learning problems.

7. A team approach would be useful in developing a readiness for the seminar. This would necessitate involvement of the school nurse, school psychologist, and school social worker.

8. Notification concerning the seminar should be given to parents, and provision should be made to allow them to participate.

Recommendations for Further Research

1. A replication of this study with random sampling from a large population of teachers could take place and with proportionate racial distribution in each cell. Both control and research instruments could be given simultaneously to decrease time-factor contamination. Better safeguards could be taken to ensure that there was not a contamination of the sampling by individuals not meeting sampling requirements. Additionally, in a repeat study, refinement of both seminar and instrument could be made that would yield more definitive and more generalizable results.

2. This seminar could be built into a health series that would be designed to give teachers a more comprehensive understanding of children's health problems and better symptom recognition. Teachers would be better prepared to share their health observations in a meaningful way with parents and could prove to be of assistance

to the majority of parents who are not as well trained as themselves.

3. A study could be done to evaluate the extent of teacher resistance to health-awareness training. The specific nature of the resistance could be researched with recommendations on how that resistance could be lowered through techniques such as small discussion groups.

4. A study of teachers' allergic health problems and the school factors that complicate these health problems could be made. Recommendations could be generated on how to better accommodate the health problems teachers have or develop in an effort to reduce lost time from employment and improve their effectiveness while engaged in teaching.

5. A more complete school environment study could be made, searching for materials that present health hazards for children and giving specific recommendations on which materials should be banned from the school. Guidelines could be generated on how the hazardous materials retained in the schools should be handled or controlled.

6. A follow-up study could be made to assess delayed recall in the knowledge of allergy, classroom adjustments, and symptom recognition.

A P P E N D I C E S

APPENDIX A

SEMINAR

Seminar

The following short, inservice seminar based primarily on Nelson's Textbook of Pediatrics (Vaughan, McKay, & Behrman, 1979) was prepared for presentation to teachers. Other materials were organized around the work of Lendon H. Smith (1976) to represent briefly the less accepted views in treatment of allergy.

Allergy is a problem or a group of problems that affects from 10 to 20 percent of the school population. For the most part allergy is poorly understood by non-medical people. Its victims are uncomfortable, irritable, and occasionally seriously ill. Allergy problems are frequently confused with behavior problems and/or learning disabilities. Also, allergy problems aggravate and not infrequently cause bad behavior and a poor attention span.

With a better understanding of the nature of allergies, each teacher would be better prepared to evaluate and take appropriate measures in terms of classroom adjustment; and in the event of severe allergic reaction, take prompt action. A teacher may also be the first to recognize that a child has a problem of an allergic nature. The teacher would then be able to help the child by passing on the observation to parents who can get medical care for the child.

An allergic reaction is an "over response" on the part of the body's defense mechanism when exposed to a substance to which it has become sensitized. A person is not allergic to things to which he has never been exposed. However, the allergic person is predisposed by hereditary factors to become allergic to many substances (antigens). The process of being sensitized takes place during a 4-to-10-day period after exposure to an antigen. The person forms

antibodies to combat the specific antigen (see visual aid 1). The 4-to-10-day period is called the induction period.

Some antigens are more prone to the production of antibodies and production of allergic reactions. The stronger the reagents, the greater is the number of the people who will respond to them in an allergic manner. An example of a strong reagent is ragweed pollen, which causes many people to react with respiratory problems.

Respiratory Allergies

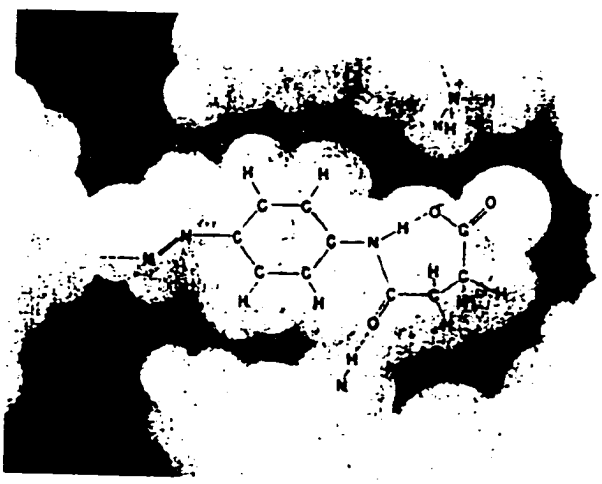
Respiratory allergies can be divided into allergic rhinitis and asthma. Allergic rhinitis can also be broken down into seasonal and perennial categories. Seasonal allergies are those that are only troublesome at given times of the year. Some pollens in the spring and grasses and trees through the warm months are often offending reagents. Perennial allergies, on the other hand, are troublesome the entire year. Reagents responsible for these problems are dusts, molds, cleaners, chemicals, pet danders, feathers, food, and similar things to which an individual is exposed year around.

In the school, the teacher not only needs to be aware of the things that can precipitate an allergic rhinitis reaction but also needs to know the signs that show that a child is an allergic child. He/she also needs to know the signs that indicate that the child is having an allergic reaction, like gaping-mouth breathing (see visual aids 2 & 3). Things the teacher may take note of are: the horizontal crease just above the tip of the nose and mouth breathing--both of which may indicate that the child is allergic. Twitching movements

VISUAL AID 1

Artist's representation of how an antigen and an antibody may combine.

Postulated structure of reactive sites of antigen and antibody.



After Pauling, Linus: Endeavor 7:43, 1948, as adapted in Smith, O.T., et. al.: Zinsser Bacteriology (ed. 11), New York, Appleton-Century-Crofts, pp. 144-146, 1957

VISUAL AID 2

Thumb sucking habit in ten-year-old boy who has been a mouth breather since early infancy. He has had perennial allergic rhinitis since 18 months of age and bronchial asthma since 2 1/2 years. Note the marked orthodontic deformity.

Profile view of same boy. His open-mouthed habitus remains fixed from persistent nasal obstruction secondary to chronic nasal allergy.

Source: Marks, 1974.

VISUAL AID 3

This gaping, allergic child, aged ten years, has had perennial allergic rhinitis since infancy and bronchial asthma since age three. It is mistakenly thought that these children suffer from adenoidal enlargement. Often, operation aggravates rather than alleviates the disorder.

Source: Marks, 1974.

of the nose--referred to as "rabbit nose" (see visual aid 4) and caused by tickling sensations in the nose--and wiping of the nose upward across the palm of the hand (see visual aid 5)--referred to as the "allergic salute"--both may indicate that the child is reacting to something in the surrounding area. (Combination of bunny-nose and tickling sensation on visual aid 6). Visual aids 7 and 8 show other complications of nasal allergy and are self-explanatory.

Asthma

Asthma is a diffuse, obstructive lung disease with hyper-reactivity of the airways when challenged with a variety of pollens and dusts. The reversibility of asthma can be spontaneous as the result of medical treatment. The most severe asthmatics wheeze prior to their first birthday, and usually the family has a heavy history of asthmatic problems. Seventy-five percent of asthmatics show their first symptoms before the age of four or five years. Onset of most attacks is due to inhalant allergens.

Emotional factors among asthmatics are not significantly different from those of the general population. Poor control of the asthma condition is associated with some physical deformity (see visual aid 9), and seems to be strongly associated with emotional and behavioral problems, but this does not increase the severity of an asthmatic attack.

In a severe asthmatic attack, a child stops wheezing, squats with his hands back on the ground under buttocks in a tripod-like sitting position in an attempt to gain ease of breathing. At this point, the child may have difficulty talking and is in

VISUAL AID 4

Source: Marks, 1974.

VISUAL AID 5

: Allergic salute in patient nine years old. He has had perennial allergic rhinitis and bronchial asthma since infancy. The nose is pushed backward and upward to free the allergic boggy turbinates from the nasal septum and allow ingress of air.

Source: Marks, 1974.

VISUAL AID 6

A B C

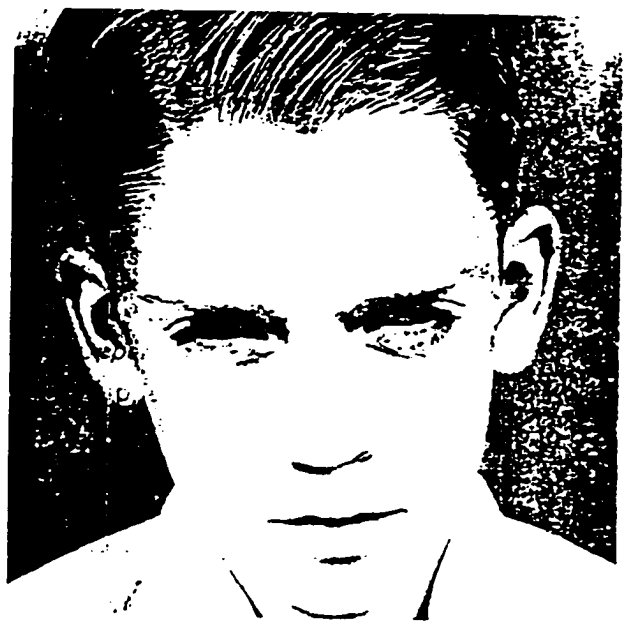
The "allergic salute" as described by Bowen and Balyeat. *A*, The tip of the nose is elevated by the palm of the hand. *B*, The nose is wrinkled from side to side. *C*, The mouth is wrinkled in the same manner.

Source: Speer, 1963.

Nose and mouth wrinkling, and (right) the "Allergic Salute," both characteristic of allergic rhinitis in children.

Source: Dworetzky, 1964.

VISUAL AID 7



Allergic shiners in patient seven years old. He has had perennial nasal allergy since infancy.

Source: Marks, 1974.

VISUAL AID 8

Silky, long eyelashes in boy ten years old who nas had chronic nasal allergy and bronchial asthma since two years of age.

Source: Marks, 1974.

VISUAL AID 9

Barrel chest and pigeon breast in a ten-year-old boy with severe intractable bronchial asthma. He has had asthma since nine months of age. He consumes large amounts of anti-asthmatic preparations including cortisone. He overuses and misuses bronchodilator aerosols or nebulizers.

Source: Marks, 1974.

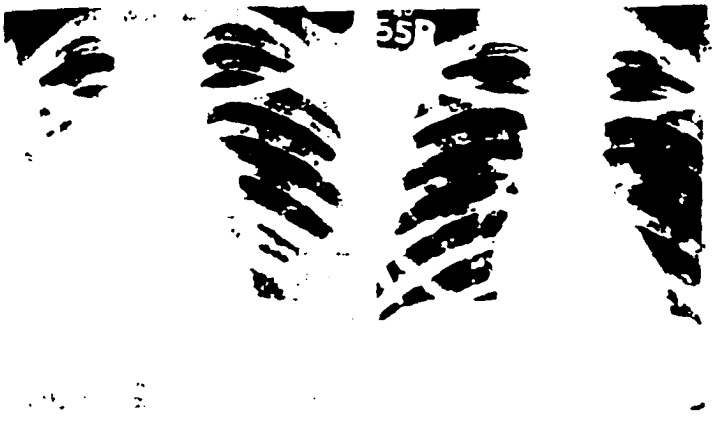
serious need of medical assistance. Vomiting is not uncommon at this point and may give temporary relief (see visual aid 10). The relief comes from the clearing of the lungs that has taken place from the muscle contractions and ejection of the obstructive material and mucous. The teacher is most frequently confronted with exercise-induced asthma and needs to be able to distinguish between the child using his illness to manipulate his situation to avoid required exercise and his need for the exercise to be suspended.

Studies (Strick, 1969, cited in McGovern, Pierce & Lee, 1971, p. 640) have proven that exercise is as beneficial to the asthmatic as other children. Additionally, exercise has a therapeutic effect and can alter the course of the asthma when approached correctly. At times of acute stress from inhalant allergens, however, exercise should be suspended temporarily. The recommended procedure for exercise of the asthmatic is five minutes of exercise followed by five minutes of rest throughout the exercise period. Short periods of exercise followed by short periods of rest actually improve the airways, while prolonged exercise further constricts the airway of the asthmatic. To prevent the occurrence of an attack, asthmatics can also take a bronchodilator medication prior to the exercise period.

When there is an ongoing management problem, the teacher should request the family to bring written instruction or guidelines on exercise from the physician.

A second classroom problem that may arise with the asthmatic child is the "nervous" shakey condition produced from the central nervous system by stimulation from asthmatic medication. The

VISUAL AID 10



(Left) Dramatic example of mucous plug in a 9-year-old asthmatic child, brought to hospital with dyspnea and cyanosis. X-ray confirmed physical diagnosis of atelectasis on right side.
Signs and symptoms were relieved after vomiting was induced by 2 teaspoonfuls of syrup of ipecac. Several doses of epinephrine had been ineffective.

(Right) Two hours later, x-ray of chest clear.

Rotner, B: Allergy in Childhood V: Choice of drugs in treatment of asthmatic attack. New York J. Med. 42:21 (Nov. 1) 1942.

range of behavior from such medication varies from improved abilities to restlessness and difficulty in settling down to complete assignments to outright behavior problems (Vaughn et al., pp. 625-35).

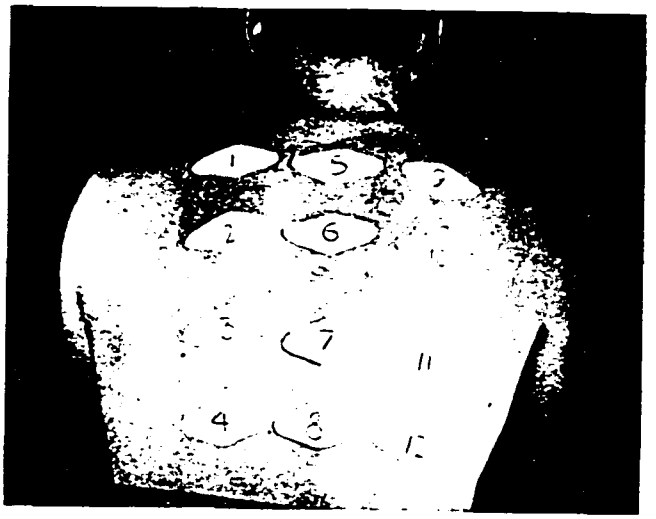
Atopic Dermatitis

Atopic dermatitis is an inflammatory skin disorder resulting from hyperreactivity of the skin when it comes into contact with allergens to which the individual has become sensitized. Hence, skin testing is a common form of allergy testing (visual aid 11). Atopic dermatitis progresses through three stages: (1) redness (erythema), (2) swelling (edema), and (3) itching (pruritus). The individual scratches to the point of traumatizing the area which brings on the second stage of weeping (exudation). As the serum from the lesion dries, crusting or scaling occurs to form a protective layer over the lesion. Secondary infection may occur from contamination, primarily from fingernails. Scratching plays a major role in the development of lesions as they occur only on the exposed portions of the extremities. The second stage can be prevented by covering the extremity to prevent scratching. Children who are constantly picking and scratching need diagnostic verification. Teachers can take note of length and cleanliness of fingernails and take steps when needed.

The early signs of allergic skin reactions often take place when a new food has been introduced. Vasoconstriction may cause the face to take on a whitish hue. This is known as the "mask of atopic dermatitis." Other signs of allergic skin problems can be generalized dryness of the skin, folds below the eyelid, and sparse hair on lateral eyebrows secondary to rubbing. Allergic

VISUAL AID 11

Materials for patch testing.



Patch tests in place.

Source: Speer, 1963.

rhinitis and asthma are frequently associated with allergic skin problems. "White dermography" is also associated with allergic skin disorders. It is an interesting hyperreactivity of the skin. Children, and sometimes adults, 'show off' how a stroke on their skin leaves a white, blanched mark that lasts for many minutes and later swells in the same pattern. Children demonstrate this by writing names and other things on their skin for the amusement of their friends. (pp. 35-38).

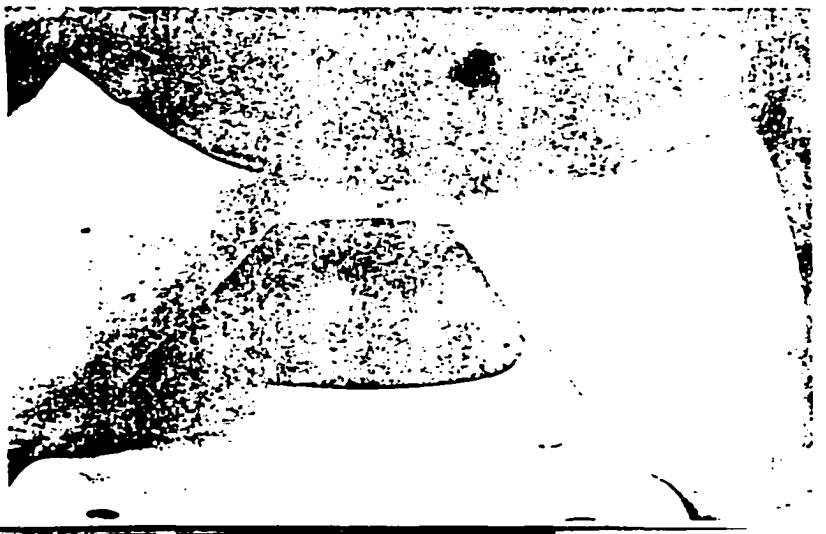
Contact Dermatitis

Contact dermatitis may be brought on by many of the same items (poison ivy, cleaners, plastic or varnished surfaces, art media, etc.) but without the allergic basis of the antigen-antibody response that exists in atopic dermatitis and eczema (visual aids 12-16). The need to avoid the irritant, however, is the same.

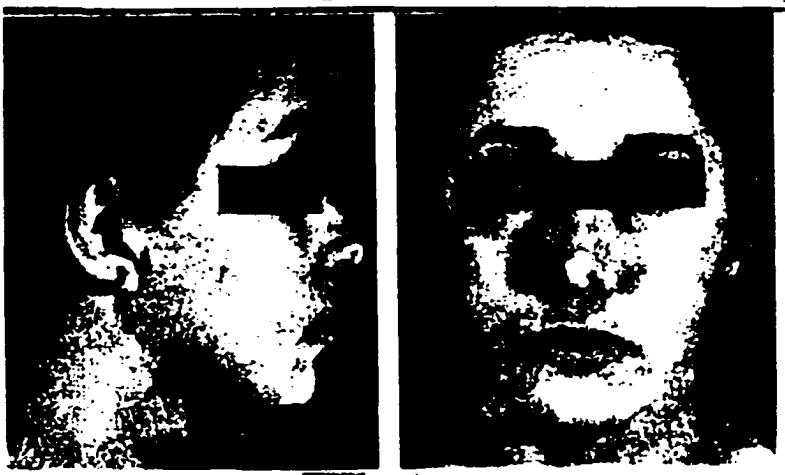
Other causes of dermatitis, for the most part, are infectious (visual aid 17) problems or seborrheic dermatitis, commonly known as "cradle cap." Infections of eczemoid and ichthyosis patches of dry skin can also look like allergic problems. Hives, called urticaria in medical terminology, are welts or sheals (visual aid 18). Up to 20 percent of the population at some time during their lives experience hives. Hives usually disappear within a couple of days. They can be brought on by exposure to an allergen and can be quite uncomfortable. They are not serious unless the airways and gastrointestinal tract become involved. Hives can also be caused by several non-allergic factors; exposure to cold, extremely hot showers, viral infections, and insect bites. If hives persist for several weeks, this may indicate serious underlying disease and a physician should be seen.

VISUAL AID 12

Primary irritant contact dermatitis to fiberglass reinforced plastic boat deck



Source: Eby et al., 1972.



Atopic eczema in a 25-year-old woman with a long history of allergic rhinitis, asthma and eczema. There were multiple allergenic and psychogenic factors. The skin is characterized by dusky red color and fine scaling.

Source: Dworetzky, 1964.

Nine-year-old boy with marginal upper eyelid eczema. He has had perennial allergic rhinitis and bronchial asthma since 14 months of age.

Source: Marks, 1974.

VISUAL AID 13

A

B

C

Contact dermatitis caused by: *A*, Selsun; *B*, Sulfur ointment: *C*, Insecticide spray.

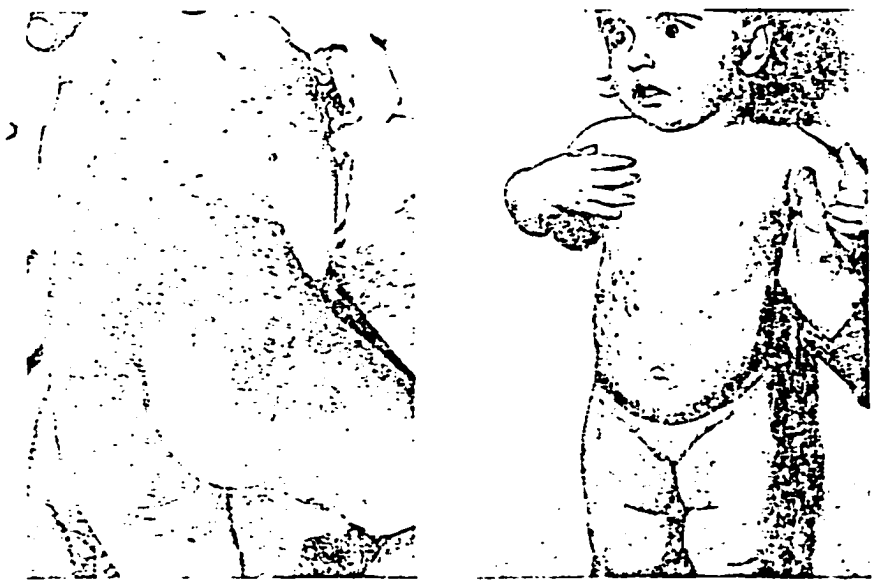
Source: Speer, 1963.

VISUAL AID 14

A, Infantile eczema of face, moderately advanced. *B*, Eczema and seborrhea (sometimes referred to as seborrheic eczema). *C*, Herpetic eczema (eczema herpeticum or Kaposi's varicelliform eruption). *D*, Allergic skin triad (eczema, seborrhea, and infection).

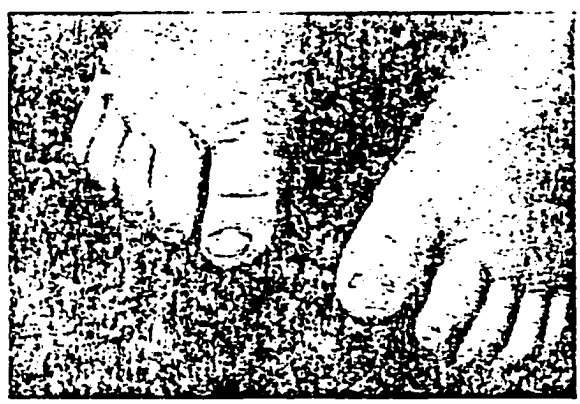
Source: Speer, 1963.

VISUAL AID 15



A

B



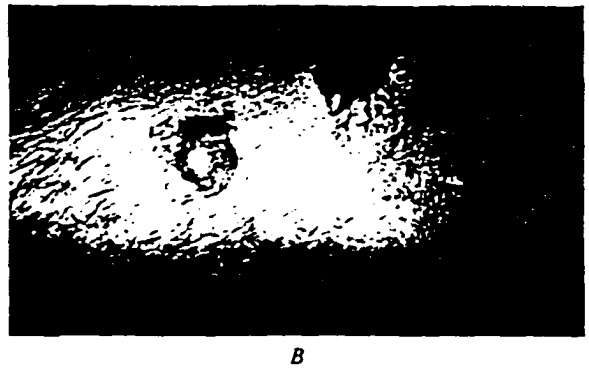
C

A and *B*. Diaper rash due to Candida albicans infection. *C*. Contact dermatitis caused by nylon in socks. (Photographs in Plates II to IV courtesy of the Department of Dermatology, Skin and Cancer Unit, New York University Medical Center.)

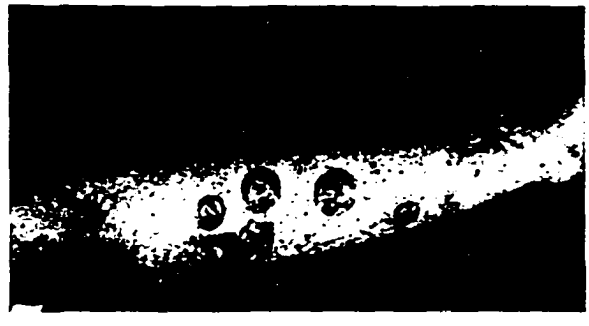
Source: Speer, 1963.

VISUAL AID 16

A



B



C

Contact dermatitis caused by: *A*, Toilet seat; *B*, Adhesive tape; *C*, Poison ivy.

Source: Speer, 1963.

VISUAL AID 17

Thirteen-year-old, grass-sensitive patient with flareup from recent excessive exposure to Bermuda grass. Note beginning stye in the left lower eyelid.

Source: Mark, 1974.

VISUAL AID 18

Angioedema and Urticaria. Note edema of lids in area between eyes and upper lip. Urticarial wheal on right cheek. (Courtesy of Dr. Frederic Speer.

Urticaria. Unusually large urticarial wheal ("bold hives") of back. Same patient as Figure 1.) (Courtesy of Dr. Frederic Speer.)

Source: Speer, 1963.

Anaphylaxis

Anaphylaxis is a heightened reactivity to a toxin. Any foreign substance, however, can cause anaphylaxis. Anaphylaxis does not have to be an allergic-based antigen-antibody response, but it can be. Anaphylaxis proceeds in the following six stages which may take no more than twenty minutes from first to last:

1. The subject feels a tingling around the mouth which spreads across the face.

2. The subject has a feeling of warmth accompanied by difficulty in swallowing and tightness of the throat and/or chest.

3. The patient becomes flushed, develops hoarseness of the voice, and hives appear. He has difficulty breathing, develops nasal congestion, itching eyes, sneezing and wheezing.

4. Abdominal cramping is accompanied by diarrhea due to smooth muscle contractions.

5. The patient has a loss of consciousness accompanied by low blood pressure and a weak heart beat, sometimes with arrhythmias.

6. Cardio-respiratory arrest occurs, usually from upper airway obstruction and/or circulatory collapse taking place. Either may cause death.

Prompt action is needed at the earliest signs to prevent serious consequences due to the speed of anaphylaxis. Adrenalin should be administered by a qualified person when necessary and the patient moved as quickly as possible to a medical facility (pp. 40-41).

Insect Allergies

Bee stings are the greatest danger in the school environment for precipitating anaphylaxis. There should be a bee-sting kit available for such a crisis. Teachers should familiarize themselves with the instructions and materials of such a kit prior to crisis. The adrenalin from such a kit should be used as a lifesaving step when it is obvious that a serious emergency exists. It should be given with care that the amount administered is correct for the size of the child. Whenever possible, a physician should be consulted by phone prior to using the adrenalin and should be prepared to meet the patient for follow-up at the emergency facility as quickly as possible.

Inhalation of particular matters of insect origin can also cause respiratory distress. The decomposed parts of the May fly, the Caddis Fly, and some moths of the Great Lakes area cause the most severe rhinitis and asthma. Insect particles can also cause irritation of the eyes upon contact.

Local reactions to biting insects such as fleas and bedbugs may be a year-round problem in some homes. Fleas may persist long after a pet (host) has been removed from the setting if the environment is not adequately treated or cleaned. Bites from other insects are seen less frequently by teachers and are more related to warmer seasons (pp. 45-46).

Ocular Allergies

When the eyes become involved in the allergic process (ocular allergies) it is usually as part of a generalized allergic

reaction. Eyelids are prone to swell when they come into contact with environmental substances (contact-dermatitis-type swelling). Medications and cosmetics are the substances most commonly seen as the sensitizing agents. Crusting and exudate at the base of eyelashes (blephoritis), or redness, swelling, and profuse tearing (of allergic conjunctivitis, see visual aid 19) are ways of recognizing allergic eye problems.

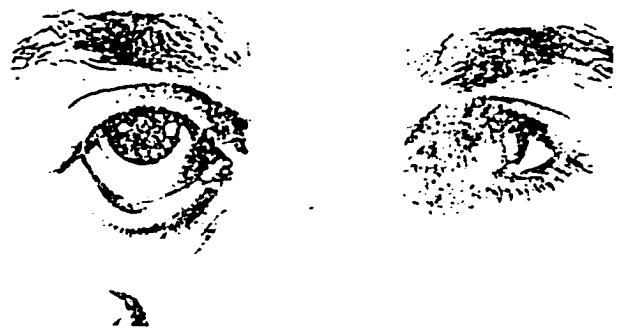
Vernal conjunctivitis is a serious eye problem that exists in two forms and appears to be related to allergic problems, but the etiology is unknown. In the palpebral form, a "cobblestone" appearance of the lids is present along with a thick, ropey discharge. In the limbal form, the cornea and sclera junctions are involved with opacity of the tissue in the area (from accumulation of eosinophils) which can progress and cause blindness (pp. 46-47).

Food Allergies

Frequency of food allergy is unknown. Estimates of allergic reaction to foods in the general population range from 0.3 to 0.7 percent. Visual aid 20 shows signs of reaction within the mouth. There is considerable controversy about what is involved in a food allergy, as most reactions have an antigen-antibody basis. Foods generating the highest incidence of allergic reactions are fish, shellfish, peanuts (a legume), nuts, seeds, eggs, wheat, and cow's milk.

Cow's milk also is involved in other intolerance problems. Lactose deficiency affects about 10 percent of the population, making it difficult for individuals to digest the lactose sugar in milk. Great discomfort and copious amounts of gas are the most

VISUAL AID 19



Muddy, injected conjunctivae in girl 14 years old. She has had perennial nasal allergy and bronchial asthma since three years of age.

Source: Marks, 1974.

VISUAL AID 20

Geographic tongue in boy aged ten years with perennial allergic rhinitis and bronchial asthma since infancy. Migrating, serpiginous or circinate bald patches, demarcated by slightly elevated pearly margins, arise on the dorsum, edges, or tip of the tongue. It may be associated with food allergy.

Source: Marks, 1974.

obvious results. Malabsorption and bloody diarrhea are among the other problems that can be caused by the consumption of cow's milk in persons sensitive to it.

Other non-allergic problems and reactions to foods have been demonstrated with dyes, food additives, and colors. No statistical proof of behavioral disturbances and hyperactivity have been produced. There are only supporting observations and statements of "firm belief" by the advocates of elimination diets (withholding foods with the suspect additives, colors, and flavoring from children believed to be sensitive). The acceptance or rejection of this body of information by persons outside the mainline of research seems to revolve around their need for statistical proof (pp. 47-50).

Serum Sickness

Serum sickness was first described in 1905 (Vaughan et al., 1979, p. 641) and is now a limited problem due to the fact that animal serums are rarely used in antitoxin preparations. Animal serums are still used in preparation of anti-toxins for rabies, botulism, gas gangrene, and transplant rejection. The use of penicillin is now the primary cause of serum sickness allergic reaction (pp. 41-42).

Drug Reactions

Penicillin has been the most studied medication for sensitivity, but skin tests fail to show anaphyloxic potential as it is due to a secondary minor allergic factor group that is not available for current tests (pp. 42-45).

Other allergic drug reactions are relatively rare due to the fact that most drugs are simple chemicals and do not form an irreversible covalent bond with a macromolecule such as a protein. However, whenever there is a reaction such as a rash, the drug suspected is discontinued except under carefully observed and critical circumstances. If a teacher observes an unexplained rash on any child, the parents should be advised.

Current Dietary Controversy

Dr. Lendon Smith, in his book Improving Your Child's Behavior Chemistry (1976), pulls together the observations from several of the controversial writers and spins a theory that at least has some face validity although it remains unproven. Smith postulates that allergic persons have abnormal blood protein and globulen E. They also are lacking some of the other nutrients such as vitamins C and B in large doses, minerals, protein, enzymes, adrenal-hormone precursors, pantothenic acid, and other vitamins necessary for the adrenal glands to make the body's natural cortisone. He also addresses the use of sugar as exhausting the body's ductless system by attempting to maintain blood sugar. It is therefore unable to produce the cortisone needed to fight the allergens. Environmental stress and food additives are also seen as taxing the ductless system and depleting its ability to respond to the allergens.

Classroom Adjustments

The classroom application is environmental adjustment to meet the need of the allergic child as much as possible. Children

with allergies can be seated across the room from plants, pets, and aquariums. Plants can be watered at the end of the week to allow the mold spores to settle over the weekend. Cleaning of the classroom window sills and vacuuming of library books and classroom carpets can be placed on a regular schedule. Art media can be changed when necessary to non-allergic materials.

Conclusion

Finally, some parents may be able to benefit from the teachers' observation that they may have an allergic child and that medical treatment may be needed for proper management.

APPENDIX B

PILOT QUESTIONNAIRE

ALLERGIC DISORDERS QUESTIONNAIRE

Developed By

Elwin C. Munson, M.A.

Barbara J. Munson, M.D.

For Measurement of Inservice Training Seminar

Given in Conjunction with Completion of Doctoral Project

Instructions: Circle one response per question

Example

1. Which of the following could be an allergic problem

   A. Water

   B. Glass

   (C) Pollen

   D. Air

ALLERGIC DISORDERS TEST

1. Perennial allergies do not include

   A. Dust, molds, and foods
   B. Cleaners and chemicals
   C. Pollens, trees, and grass
   D. Pet dander and feathers
   E. All of the above.

2. The allergic person's development of antibodies and later reactions is the result of

   A. Hereditary factors they are born with
   B. Recovery process after given illnesses
   C. Repeated exposure to substance
   D. Natural aging process

3. The functions of the antibodies are

   A. To repair tissue
   B. To combine with foreign protein
   C. To promote growth
   D. To prevent bleeding

4. The allergic salute is

   A. Wiping the nose on the forearm or sleeve with 'back and forth' motion
   B. Wiping the nose in an upward motion on the heel of the hand
   C. Rubbing the eyes in a lateral motion
   D. Scratching of the head

5. Rabbit nose refers to

   A. "Runny nose"
   B. Twitching movement
   C. The nose crease
   D. Inflammed appearance

6. Asthmatic symptoms are due to

   A. Smooth muscle contractions
   B. Swelling of the mucous membranes
   C. Obstruction of the bronchi with mucous
   D. All of the above

7. 75 percent of asthmatics develop symptoms

   A. In the newborn period (prior to one month of age)
   B. Before one year of age
   C. By age four to five
   D. After age 15

8. Emotional factors have been found in asthmatics to be

   A. No different than in the general population
   B. The major contributing factor
   C. Of no significance
   D. The major determinate of severe attacks

9. In severe asthma attacks the child may

   A. Stop audible wheezing
   B. Sit in tripod like position
   C. Have difficulty walking and talking
   D. Vomit and gain some relief
   E. All of the above

10. Exercise-induced asthma should not be a problem to teachers because it

   A. Is the least frequent type of asthmatic problem that confronts teachers
   B. Can be prevented by taking medication prior to exercise
   C. Is an absolute contra indication to physical education classes
   D. None of the above

11. Asthmatic medications can cause the child to be

   A. Tired and sleepy
   B. Shaky and restless
   C. More distractable
   D. A and C
   E. B and C

12. Which of the following is not a stage of atopic dermatitis

    A. Weeping
    B. Pustule formation
    C. Crusting
    D. Secondary infection

13. In atopic dermatitis, skin lesions

    A. Are heaviest in areas covered by clothing
    B. Frequently develop after the introduction of new foods
    C. Are rarely associated with allergic rhinitis
    D. Rarely itch

14. Contact dermatitis may be caused by all of the following in the school environment except

    A. Cleaners
    B. Surfaces (plastics and varnishes)
    C. Art media
    D. Paper and wood fibers

15. Hives (uticaria) are caused by an allergic reaction in which of the following

    A. Hot showers causing uticaria around the neck area
    B. Cold uticaria caused from exposure
    C. Viral infections
    D. All of the above
    E. None of the above

16. Anaphylaxis (shock) is a heightened reactivity due to

    A. Fear after being surprised or startled
    B. Coming into contact with an electric current
    C. Grief from a personal loss or disturbing events
    D. A toxin that progresses rapidly and has been introduced in the system

17. Select which of the following is not a symptom of anaphylaxis

    A. Tingling around mouth and face
    B. Loss of feelings in arms and legs
    C. Feeling of warmth and difficulty swallowing and breathing
    D. Loss of consciousness

18. A bee sting kit is available in

    A. Administrative Office
    B. Nurse's Office
    C. My classroom
    D. Unknown

19. Reaction to insects can be the result of

    A. Bites or stings
    B. Touching particular matter of insect origin
    C. Contact with insect's nest
    D. All of the above

20. The most common cause of ocular (eye) allergic problems are

    A. Pool chemicals
    B. Playground dust
    C. Cosmetics and medications
    D. Insect debris

21. Incidences of food allergic reactions are believed to be

    A. From certain combinations of foods
    B. From highly seasoned foods
    C. High in the general population
    D. Low in the general population

22. Foods most frequently involved in allergic reactions are

    A. Fish and shellfish
    B. Peanuts, nuts, and seeds
    C. Eggs, wheat, and cow's milk
    D. All of the above

23. Dyes (food coloring), food additives, food preservatives, and aspirin

    A. Can cause serious allergic reactions in some people
    B. Have been proven to cause allergic hyperactivity in many children
    C. May cause behavioral problems of a non-allergic nature
    D. Have been proven to be of no effect on children's behavior

24. Cow's milk can cause illness from

    A. Allergic reaction
    B. Lactose (milk sugar) intolerance
    C. Malabsorbtion, bloody diarrhea
    D. All of the above

25. Serum Sickness is of concern because it

    A. Has many causes
    B. Can be cured with penicillin
    C. Can be cured with animal antitoxins
    D. All of the above
    E. None of the above

26. Most frequent indication of drug reaction is

    A. Vomiting
    B. Rash
    C. Anaphylaxis (shock)
    D. Headache, diarrhea

27. Allergic drug reactions are most commonly caused by

    A. Antibiotics
    B. Antihistamines
    C. Sedatives
    D. Tranquilizers

28. The treatment of allergic problems in children does not include which of the following

    A. Desensitization
    B. Bronco dilators
    C. Tranquilizers
    D. Antihistamines

29. Indicate which of the following factors does not need prophylaxis according to the theories of Dr. Linden Smith and Linus Pauling

    A. Large dose of vitamins C and B
    B. Minerals and pantothenic acid
    C. Adrenal hormone precursors, proteins, and enzymes
    D. Antihistamines

30. Indicate which of the following is not a common allergen producer in the classroom

A. Mold spores

B. Dust

C. Sand

D. Cleaners

E. Art media

APPENDIX C

QUESTIONNAIRE KEY

KEY ON PILOT TEST

1.	C	16.	D
2.	C*	17.	B
3.	B	18.	D
4.	B	19.	A*
5.	B	20.	C
6.	D	21.	D*
7.	C	22.	D
8.	A	23.	C*
9.	E	24.	D
10.	E	25.	E*
11.	E	26.	B
12.	B	27.	A
13.	B	28.	C
14.	D	29.	D
15.	E	30.	C

*Deleted from final test form

APPENDIX D

RESEARCH QUESTIONNAIRE

ALLERGIC DISORDERS QUESTIONNAIRE

Developed By

Elwin C. Munson, M.A.

Barbara J. Munson, M.D.

For Measurement of Inservice Training Seminar

Given in Conjunction with Completion of Doctoral Project

Instructions: Circle one response per question

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   A. Water

   B. Glass

   (C.) Pollen

   D. Air

ALLERGIC DISORDERS QUESTIONNAIRE

1. Perennial allergies do not include

   A. Dust, molds, and foods
   B. Cleaners and chemicals
   C. Pollens, trees, and grass
   D. Pet dander and feathers
   E. All of the above

2. The functions of the antibodies are

   A. To repair tissue
   B. To combine with foreign protein
   C. Phagocytize (engulf) bacteria
   D. Dissolve antigens

3. The allergic salute is

   A. Wiping the nose on the forearm or sleeve with 'back and forth' motion
   B. Wiping the nose in an upward motion on the heel of the hand
   C. Rubbing the eyes in a lateral motion
   D. "Flicking" of nasal matter

4. Rabbit nose refers to

   A. "Runny nose"
   B. Twitching movement
   C. The nose crease
   D. Inflammed appearance

5. Asthmatic symptoms are due to

   A. Smooth muscle contractions
   B. Swelling of the mucous membranes
   C. Obstruction of the bronchi with mucous
   D. All of the above

6. 75 percent of asthmatics develop symptoms

   A. In the newborn period (prior to one month of age)
   B. Before one year of age
   C. By age four to five
   D. By age seven to ten

7. Emotional factors have been found in asthmatics to be

   A. No different than in the general population
   B. The major contributing factor
   C. Of no significance
   D. The major determinate of severe attacks

8. In severe asthma attacks the child may

   A. Stop audible wheezing
   B. Sit in tripod-like position
   C. Have difficulty walking and talking
   D. Vomit and gain some relief
   E. Do all of the above

9. Exercise induced asthma should not be a problem to teachers because it

   A. Is the least frequent type of asthmatic problem that will confront teachers
   B. Can be prevented by taking medication prior to exercise
   C. Is an absolute contra indication to physical education classes
   D. None of the above

10. Asthmatic medications can cause the child to be

   A. Tired and sleepy
   B. Shaky and restless
   C. Distractable and aggressive
   D. A and C
   E. B and C

11. Which of the following is not a stage of atopic dermatitis

   A. Weeping
   B. Pustule formation
   C. Crusting
   D. Secondary infection

12. In atopic dermatitis, skin lesions

   A. Are heaviest in areas covered by clothing
   B. Frequently develop after the introduction of new foods
   C. Are rarely associated with allergic rhinitis
   D. Rarely itch

13. Contact dermatitis may be caused by all of the following in the school environment except

    A. Cleaners
    B. Surfaces (plastics and varnishes)
    C. Art media
    D. Paper and wood fibers

14. Hives (urticaria) are caused by an allergic reaction in which of the following

    A. Hot showers causing urticaria around the neck area
    B. Cold urticaria caused by exposure
    C. Viral infections
    D. All of the above
    E. None of the above

15. Anaphylaxis (shock) is a heightened reactivity due to

    A. Fear after being surprised or startled
    B. Coming into contact with an electric current
    C. Grief from a personal loss or disturbing events
    D. A toxin that has been introduced by systemic circulation

16. Select which of the following is not a symptom of anaphylaxis

    A. Tingling around the mouth and face
    B. Loss of feelings in arms and legs
    C. Feeling of warmth and difficulty swallowing and breathing
    D. Loss of consciousness

17. A bee sting kit is available in

    A. Administrative Office
    B. Nurse's Office
    C. My classroom
    D. Unknown

18. The most common cause of ocular (eye) allergic problems are

    A. Pool chemicals
    B. Playground dust
    C. Cosmetics and medications
    D. Insect debris

19. Foods most frequently involved in allergic reactions are

    A. Fish and shellfish
    B. Peanuts, nuts, and seeds
    C. Eggs, wheat, and cow's milk
    D. All of the above

20. Cow's milk can cause illness from

    A. Allergic reaction
    B. Lactose (milk sugar) intolerance
    C. Malabsorbtion, bloody diarrhea
    D. All of the above

21. Most frequent indication of drug reaction is

    A. Vomiting
    B. Rash
    C. Excessive sweating
    D. Headache, Diarrhea

22. Allergic drug reactions are most commonly caused by

    A. Antibiotics
    B. Antihistamines
    C. Stimulants
    D. Cough Suppressant

23. The treatment of allergic problems in children does not include which of the following

    A. Desensitization
    B. Bronco dilators
    C. Tranquilizers
    D. Antihistamines

24. Indicate which of the following factors is not needed for prophylaxis according to the theories of Dr. Linden Smith and Linus Pauling

    A. Large dose of vitamins C and B
    B. Minerals and pantothenic acid
    C. Adrenal hormone precursors, proteins, and enzymes
    D. Antihistamines

25. Indicate which of the following is not a common allergen producer in the classroom

A. Mold spores

B. Dust

C. Sand

D. Cleaners

E. Art media

APPENDIX E

DATA SCORES

DATA

KNOWLEDGE OF ALLERGIES

Groups	I			II		III			IV
	Pre	Post				Pre	Post		
Jr. High	16	16	Nellie	16	Perry	13	7	Chesaning	9
	9	25		18		10	8		12
	10	16		6		10	9		11
	14	18		20		11	14		10
	6	14		18		11	6		13
	8	15		18		15	15		15
	10	16		18		13	12		10
	14	19		17		9	11		6
	11	18		17		8	9		10
	12	17		21		8	9		10
	8	14	High S.	1		17	15		11
	12	15		4		12	14		9
	13	18		4		16	18		10
	9	15		4		17	20		10
	8	15		4		13	11		14
	13	16		5		12	11		5
	9	12		6		13	12		10
	9	15		6		15	15		16
	10	14		7		8	13		5
	10	17		7		15	16		7
	14	17		9		14	7		13
Louise	4	11		8		13	13		9
	5	20		8		15	11		8
	8	17		9		13	7		11
	13	21		10		12	9		10
	14	19		11		11	11		10
	9	17		11		10	10		13
	2	15		11		8	9		9
	7	17		11		10	7		10
	8	13		11		15	17		14
	5	16		11		16	17		14
	7	18		20		16	17		7
	6	16		14		14	12		11
Elsa M.	7	8		13		12	14		4
	11	15		17		7	15		6
	9	17		17		10	13		9
	7	19		14		17	17		15
	5	12		14		18	9		6
	11	18		16		12	14		9
	13	17		16		9	11		5
	8	13		14		12	9		11
	11	16		15		12	11		13
	6	14		13		12	14		10
	6	14		12		9	8		7
	10	17		13		15	16		17
	10	23							8
	9	17							17
									11
									7
									13

DATA

CLASSROOM ADJUSTMENTS

Groups	I			II		III			IV
	Pre	Post				Pre	Post		
Jr. High	3	3	Nellie	3	Perry	2	2	Chesaning	1
	2	3		4		2	1		2
	3	2		2		4	3		1
	3	3		4		3	2		2
	2	3		4		2	2		1
	3	4		4		3	3		3
	2	3		4		4	4		1
	3	3		3		2	3		1
	4	4		3		2	1		2
	2	3		5		2	1		2
	2	4	High S.	0		4	4		3
	3	4		2		2	2		3
	3	4		1		2	2		2
	3	3		2		2	2		1
	1	4		2		2	1		2
	1	2		2		4	3		2
	3	3		1		5	4		3
	2	3		3		3	3		3
	2	2		0		1	4		1
	1	4		1		2	2		6
	5	4		3		3	1		1
	2	5		2		0	0		2
	3			2		3	2		2
Louise P.	1			1		3	1		3
	2	4		3		4	3		2
	2	4		0		2	2		3
	3	4		1		2	1		2
	2	4		1		1	3		3
	0	3		2		4	2		2
	4	4		2		2	5		3
	2	3		1		4	5		3
	0	3		4		5	5		4
	1	3		1		4	2		2
	3	4		1		3	2		1
Elsa M.	1	0		3		2	4		3
	3	2		3		3	3		5
	5	4		0		4	4		3
	3	4		2		1	3		1
	1	1		3		4	2		2
	2	3		2		2	3		1
	1	1		2		2	3		3
	1	2		3		5	3		3
	1	1		2		3	2		2
	1	3		2		1	1		3
	3	1		2		3	2		3
	2	3							0
	1	4							4
	1	3							2
									0
									3

DATA

SYMPTOM RECOGNITION

Groups	I		II		III			IV
	Pre	Post			Pre	Post		
Jr. High	4	4	Nellie	4	Perry	2	1	Chesaning 2
	2	4		4		2	5	3
	2	3		2		2	3	3
	3	4		5		2	4	2
	1	2		4		2	2	3
	2	4		4		2	3	3
	2	3		4		3	2	2
	2	5		4		2	2	0
	3	4		4		1	1	2
	4	3		4		1	0	1
	3	2	High S.	0		3	2	2
	3	5		0		3	5	4
	3	5		1		4	4	1
	1	4		2		3	5	1
	3	6		0		3	2	3
	3	5		3		2	2	2
	2	4		1		1	2	1
	2	4		1		4	4	4
	5	4		2		1	2	0
	3	4		1		4	3	2
	3	4		3		3	2	2
	1	1		1		1	4	2
Louise P.	0	5		2		4	4	1
	1	3		3		1	0	2
	2	4		3		2	1	2
	4	4		4		2	2	2
	2	4		3		3	2	3
	1	3		4		1	1	3
	1	4		3		2	1	2
	2	3		4		3	2	2
	2	6		3		4	2	3
	3	3		4		2	2	1
	0	4		4		2	2	1
Elsa M.	3	4		4		2	3	1
	3	4		4		1	5	1
	0	4		4		1	3	0
	0	6		4		3	3	2
	1	3		5		1	3	0
	1	4		4		2	5	2
	5	5		3		3	2	0
	2	1		4		1	1	3
	3	5		4		3	2	3
	4	2		3		3	3	3
	1	5		3		2	2	0
	3	5		3		4	3	5
	3	6						4
	3	4						4
								4
								2
								5

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