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Can a research map help organizing interdisciplinary studies of relation between medical disorders and school performance? A framework for development of pediatric school psychology

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Abstract

School psychologists try to prepare ideal conditions for students in order to learn better because education is the most important tool in achieving sustainable development in human societies. Pediatric school psychology is a new area of interest concerned with the impacts of medical disorders on the students' school performance and education. This area, previously known as educational medicine, focuses on medical aspects of school psychology.

Pediatric school psychology includes pediatric medical concept and psychology and education. According to this fact, developing a conceptual model to integrate these concepts, organize previous studies, translate them into protocols and guidelines and understand its pitfalls for further studies is necessary. The present research map aims to clarify the process through which the guidelines and protocols needed for evaluating, diagnosis and management of the illnesses affecting learning, education and school performance. The present roadmap highlights the diseases believed to affect learning and school performance based on previous studies. The resulted array would show different aspects of learning influenced by the disorder, paving the way for further studies based on which policymakers would detect the gaps and develop clinical guidelines. In other words, the roadmap not only provides a map for further studies in this field but also helps translate research into practice.

Keywords
Pediatric psychology, Educational medicine, Roadmap

Introduction

"If the future is created from our present-day activities, as these quotes suggest, then who we are and what we do as school psychologists now will determine our future roles." (1)

According to the Blueprint III model of school psychology, school psychologists should possess the ability to use problem-solving and scientific methodologies to develop, evaluate, and appropriately apply empirically validated interventions at both individualized and systematic level (2).

On the other hand, within the field of school psychology, there has been a burgeoning trend towards expanding the scope of school psychologists of practice from that of diagnosticians to psychologists who are able to provide an array of services within a school setting. Thus school psychologists have had much to contribute to health care programs, particularly in the assessment of learning and behavioral outcomes, as well as promotion of health and prevention of disease that has largely taken place in school settings (3).

School psychologists should get more involved in healthcare programs as physical and mental health is a key element in determining the learning abilities of the students. In other words, medical conditions and health status may affect the learning ability and the school performance of a student through decreasing the sensory perception, impairing cognition, connectedness and being engaged with school works, and increasing the rate of absenteeism and drop out (4).

Several studies have been conducted in this field as many authors have tried to evaluate the relation between school performance and medical disorders (5, 7). For example, Shillingford et al studied the relation between complex congenital heart disease and school performance among students (6). The influence of diabetes on the learning ability and school performance of children was also investigated by Dahlquist et al (8). Asthma and allergy, seizure, sleep disorders, anemia, thyroid dysfunction, etc. are among other diseases with confirmed negative effects on the learning abilities and school performance of the students (9, 10).

Despite the numerous studies published in this field in different parts of the world, however, the results of these studies should be applied in the daily practice of school health practitioners or policy makers. In other words, a school psychologist or physician must have all probable medical situations when assessing a student suffering from certain problems in learning or school performance.

Pediatric school psychology is a new area of interest concerned with the impacts of medical disorders on the students' school performance and education. This area, previously known as educational medicine in early 1970, focuses on medical aspects of school psychology (11, 12).

Pediatric school psychology aims to improve the mental and physical health situations and subsequently the learning abilities of the students and try to improve educational indices in the society. Thus, pediatric school psychologists also play a vital role in implementing school health programs in schools (13).

Pediatric school psychology, which includes both pediatric medical concept and psychology and education, has a multidisciplinary approach. According to this fact, developing a conceptual model to integrate these concepts, organize previous studies, translate them into protocols and guidelines and understand its pitfalls for further studies is necessary.

Idea; offer a research map

Nowadays, many research centers and universities design a flowchart or map showing the steps, which should be taken prior to developing a long-term research, project in multidisciplinary fields (14-17). Such a map can also help policymakers and researchers to define the priorities and objectives in line with the study goals and subsequently reduce the excess costs.

The present research map aims to clarify the process through which the guidelines and protocols needed for evaluating, diagnosis and management of the illnesses affecting learning, education and school performance (figure 1).

Evaluation of idea

Based on the flowchart, the research activities in the area of pediatric school psychology are divided into two main categories: diseases, which affect learning and school performance, and those, facilitated by school setting.

Diseases which affect the learning and education

Diseases which affect learning, education and school performance (according to available studies or evidences) are listed in the column of the map. The components of learning and education such as memory, attention, and processing, on the other hand, are outlined in the first row (18).

Connecting the diseases to the learning components, a matrix would be formed (figure 2). This matrix indicates that the relation between diseases and the learning components need further investigations. Some questions should be answered in order to clarify this relation (figure 3):

- Step 1: Observation; Can a disease affect the linked component of learning?
- Step 2: Mechanisms of effect. How can this disease affect the linked component of learning?
- Step 3: Intervention; What should be done to eliminate this impact?

For example, based on available studies, diabetes can affect school performance (19) (figure 4). It,

however, remains unclear whether diabetes affects school performance by damaging memory or not (Step1).

In order to answer this question, the available databases should be searched for possible studies performed in this field. In the absence of any related study, a project should be designed. The mechanisms through which diabetes may lead to memory impairment should thereafter be explained in order to approve the hypothesis suggested by the project (Step2).

Thereafter more projects should be conducted to discover the strategies effective in eliminating the effects of diabetes on memory (Step 3).

When the impact of diabetes on all of the learning components was discovered, the obtained results should be analyzed and translated into protocols and guidelines, aiming to help practitioners the impact of the disease on learning and education. Consultants can also use these protocols to rule out medical conditions responsible for complaints such as learning difficulties and school problems in the students. As the final step, a curriculum should be designed for the training practitioners who deliver educational medical services in schools, health centers and offices.

Diseases facilitated by school setting

School attendance or absenteeism can be secondary to a number of diseases. During epidemics, for instance, diseases can transmit easily among students due to their close contact in classrooms. Certain events such as falling and sport injuries are also considered as a threat for the students' health in schools. Therefore, some instructions must be established and then respected by the schools to reduce these events and the related diseases (figure 5).

The final objective of designing a research map is to develop feasible guidelines and protocols, aiming to bring into being physicians who would be able to improve educational health care systems in the society (figure 6).

This map can also help physician rule out possible accompanying clinical diseases in students referred because of learning disorder or poor school performance, as consultation and behavioral therapy would not be effective unless the underlying cause is surmounted.

Conclusion

Research roadmap is more effective when developed for an issue with an interdisciplinary nature, as research in these fields would need close collaboration between various researchers with different skills.

The attraction towards the interdisciplinary Pediatric school psychology has increased in the recent years. This field is mainly based on topics related to medicine, psychiatry, education and public health. Considering its nature, the majority of the researches and studies conducted in this regard are performed by different research centers working in different fields. These researches, however, should be organized before they would become useful in practice. Developing a road map in this regard can help individuals working in this field to design studies to solve their research questions based on the articles published in this regard. This could not only help arrange the articles published in the field but also pave the way for designing new studies, which would have an important role in reducing the cost and benefiting from the existing resources to achieve the objectives. In other words, this road map would show the direction based upon which one could translate knowledge into practice and help the researchers working in this field. Moreover, in view of the fact that pediatric school psychology is a new discipline, the studies in this field should be translated into practice at a frantic pace in order to provide the healthcare providers working in this field with the required protocols and clinical guidelines.

Overview Box

What do we already know about the subject?

Pediatric school psychology is a new area of interest concerned with the impacts of medical disorders on the students' school performance and education. This area, previously known as educational medicine, focuses on medical aspects of school psychology.

What does your proposed theory add to the current knowledge available, and what benefits does it have?

Pediatric school psychology includes pediatric medical concept and psychology and education. According to this fact, developing a conceptual model to integrate these concepts, organize previous studies, translate them into protocols and guidelines and understand its pitfalls for further studies is necessary.

The present research map aims to clarify the process through which the guidelines and protocols needed for evaluating, diagnosis and management of the illnesses affecting learning, education and school performance.

Among numerous available studies, what special further study is proposed for testing the idea?
Despite the numerous studies published in this field in different parts of the world, however, the results of these studies should be applied in the daily practice of school health practitioners or policy makers. Further studies must be run in order to tranlate these research into protocols according to this roadmap.

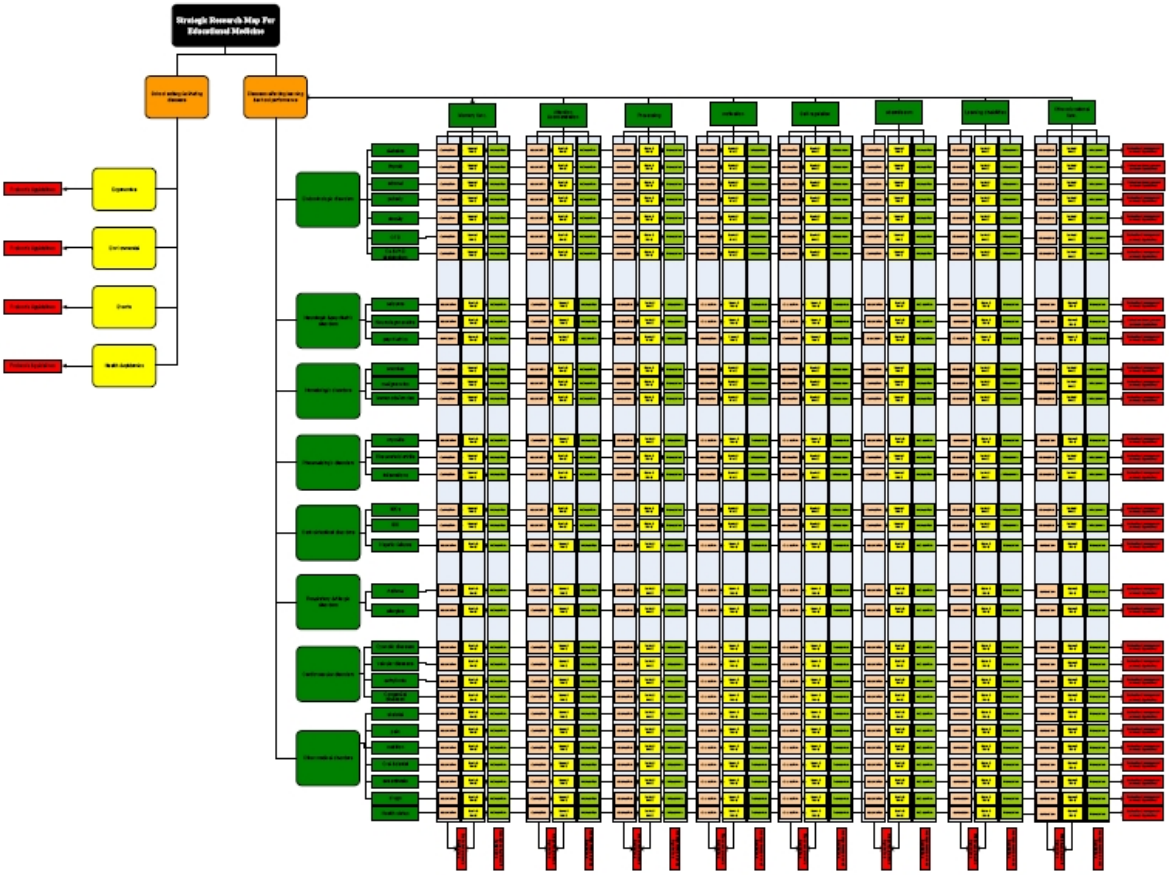

Figure 1. An overview of research map for studies of relation between medical disorders and school performance is shown

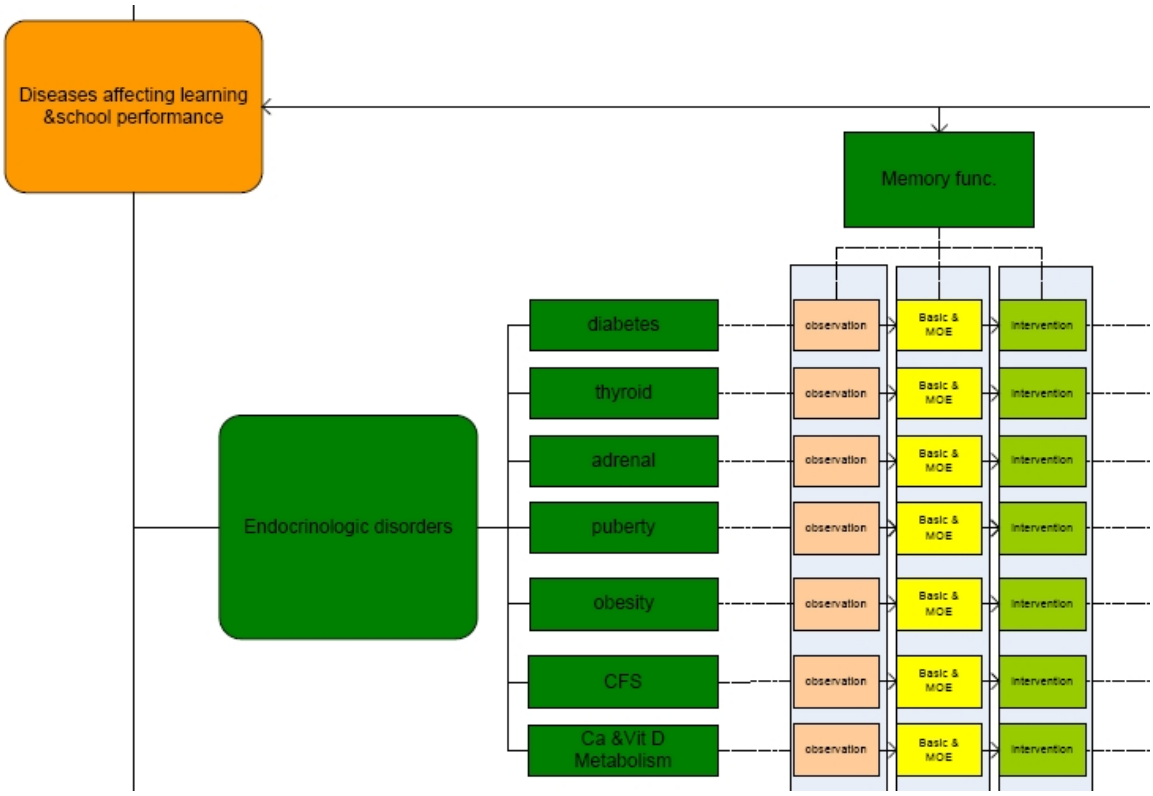

Figure 2. Matrix developed due to connecting the diseases to the learning components

Figure 3. Three steps for clarification of disease – learning relation. MOE: Mechanisms of effect

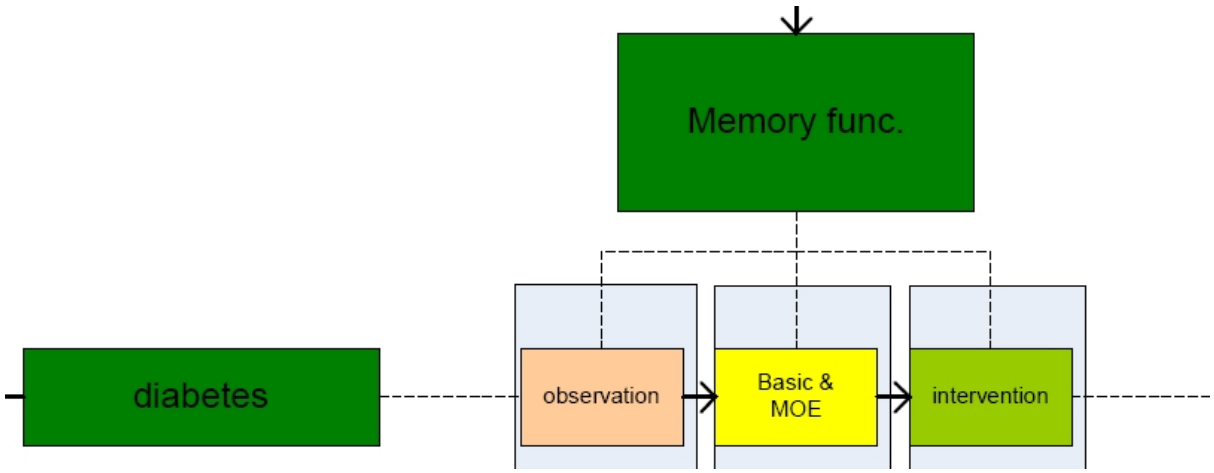

Figure 4. organizing the studies of relation between diabetes (disease) and memory function (a component of learning); an example

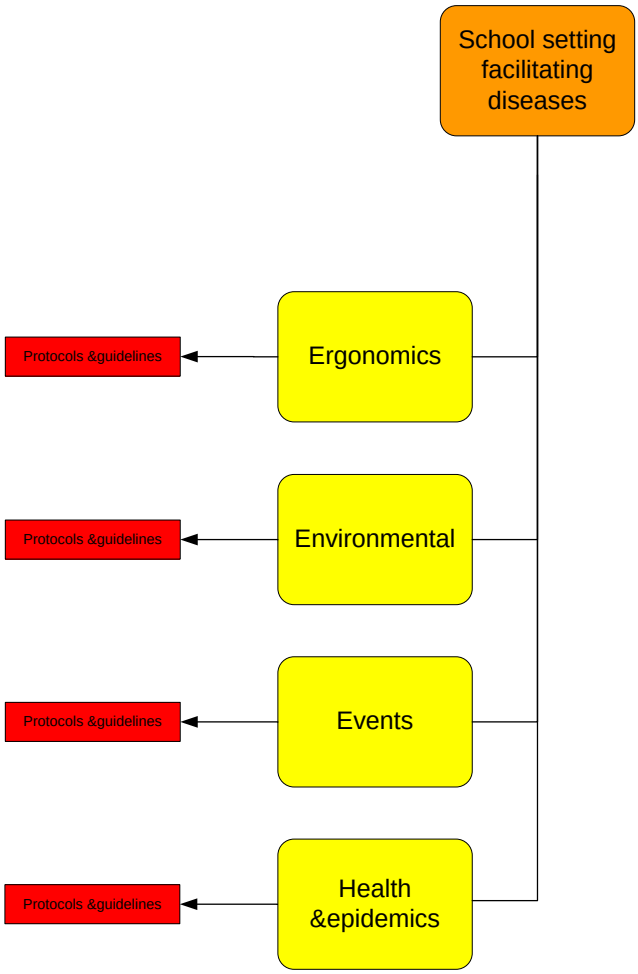

Figure 5. School setting can also facilitate some diseases. Policy makers must write some regulations and protocols in order to decrease the prevalence of these disorders

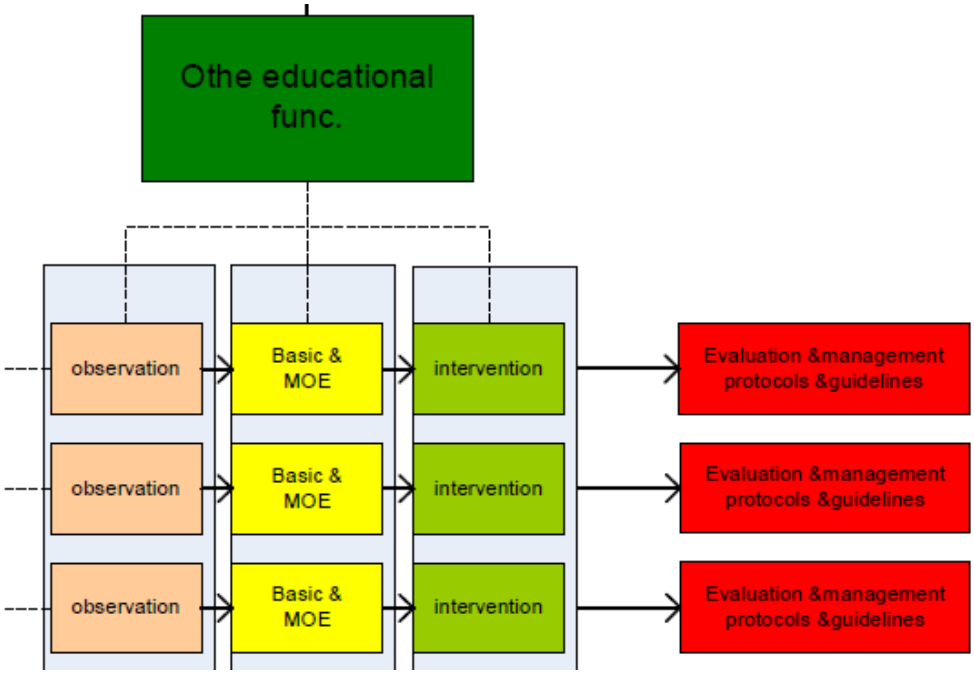

Figure 6. Translating studies into evidence-based feasible guidelines and protocols (Terminal boxes)

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