

## Impact of Continuing Medical Education in the Implementation of Health Projects: Case of the Project “Improving the Management of Diabetes and its Complications in The Department of Saint-Louis in Senegal”

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### Abstract

### Original Research Article

**Introduction:** Diabetes is on the rise in sub-Saharan Africa, and particularly in Senegal where the latest prevalence estimates are around 3.4%. The region of Saint-Louis is a special case in terms of prevalence, since it far exceeds the national average, with more than 10% of the local population in 2011, or 30,000 to 40,000 cases. This epidemiological evolution of diabetes in the department of Saint-Louis is the direct consequence of many causes, including the lack of continuing medical education for paramedical staff. **Material and methods:** Our work proposes to return to the need for continuing medical education of paramedical staff in the department of Saint-Louis, through two surveys carried out with the diabetic people: a base line survey carried out before the training, and an end line survey after the diabetes training. The general objective is to assess the skills of health workers and their effectiveness in the management of diabetes and its complications, as well as the quality of diabetes management. **Results:** We found that the level of knowledge of nurses in charge of health posts and other paramedical staff is relatively heterogeneous. The average level obtained for right answers (66.76% during the base line survey and 82.4% during the end line survey) reflects the lack of continuing education concerning the diabetic disease in the department of Saint-Louis. **Conclusion:** The assessment of the knowledge of nursing staff in the department of Saint-Louis to which we proceeded is edifying. It is part of a logic of improving knowledge of diabetic disease and its complications. It shows that in the peripheral health structures, the need for continuing medical education is real.

**Keywords:** Continuing medical education, paramedical staff, diabetes care, complication.

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## INTRODUCTION

Continuing medical education has been at the center of a great debate for several decades because no one can claim to practice a profession with the only knowledge of their initial training. This is true for all professions, including the medical profession. Professional practice leads the practitioner to note in his practice the possible need for additional training, particularly about the rapid evolution of knowledge, the appearance of new techniques and new therapies [1-4].

The moral obligation to provide quality care to patients does not simply require an update of knowledge, but above all its transfer into current clinical practice. Continuing medical education is the ideal place for updating knowledge and keeping in touch with recent clinical practices [5, 6]. Moreover, there is a gap between the world of research and that of clinical practice. To allow the implementation of new scientific discoveries in medical care, hours, and days of continuing education have been recommended.

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Continuing medical education is of particular importance in times of rapid change, such as those experienced today in developing countries, which are trying to reorient their health systems towards primary health care - an essential condition for achieving health for all - despite the continual deterioration of the socio-economic climate. The management of health services becomes much more efficient when continuing medical education is provided to all categories of health personnel, and when supervision of agents is integrated into the educational process [6-8]. Continuous training will make it possible to establish a link between basic training and practice; accompanied by supervisory measures, it raises the level of care and reinforces work efficiency. Because of its importance, continuing education requires a sustained effort to make human work more closely aligned with the achievement of health program goals [1-3, 6].

This study is an assessment of training activities of the project "Improvement of the management of diabetes and its complications in the department of Saint-Louis of Senegal", implemented by the Gaston Berger University of Saint-Louis (Senegal) with the support of the NGO "Humanity and Inclusion" and the Medical Region of Saint-Louis, in partnership with the Association of Diabetic People of Saint-Louis, and the NGO "World Diabetes Foundation". This project also received the collaboration of the Government of Senegal, through the Ministry of Health and Social Action, and through the Division of Chronic Non-Communicable Diseases. The general objective was to assess the skills of health workers and their effectiveness in the management of diabetes and its complications, as well as the quality of diabetes management, which guarantees a reduction of complications.

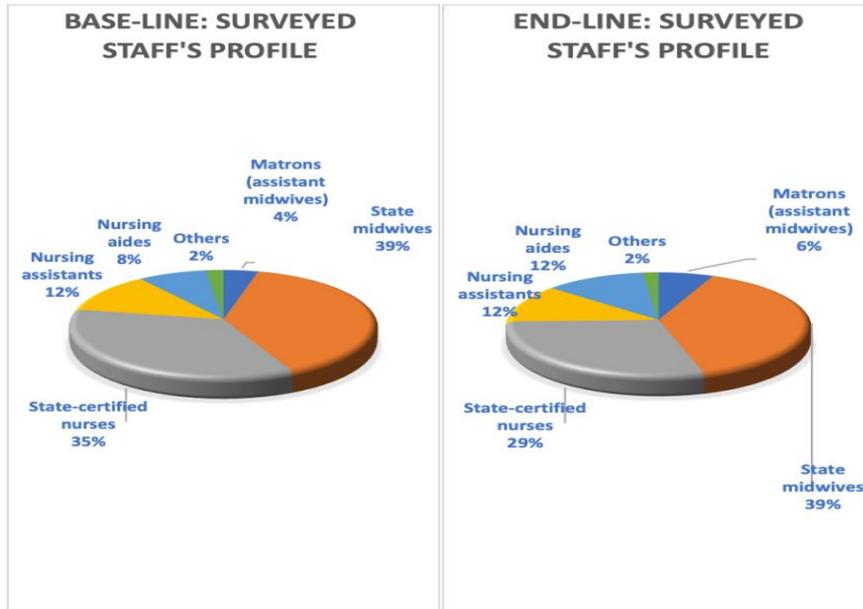
## MATERIALS AND METHODS

For operational reasons, this evaluation ultimately focused on 100 nurses, midwives, and nursing assistants in the department of Saint-Louis; representing more than 80% of the target population to be trained. A cross-sectional evaluation was carried out at the beginning of the project to be able to measure the difference in prevalence of the selected indicators. A questionnaire was administered to paramedical staff.

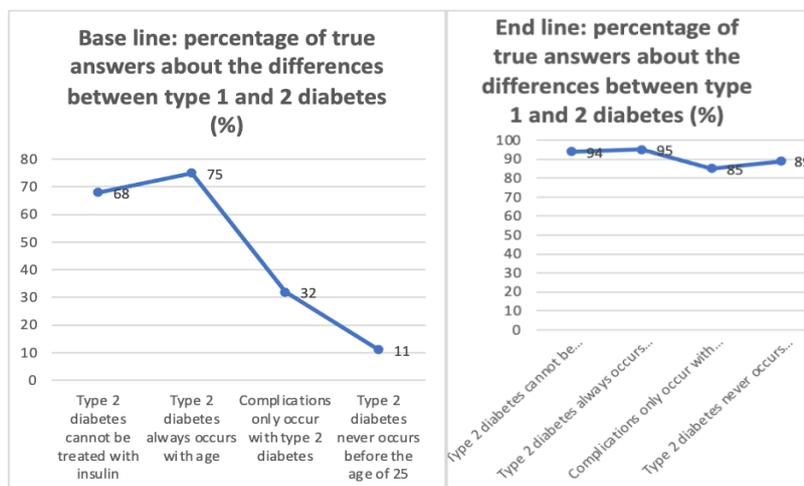
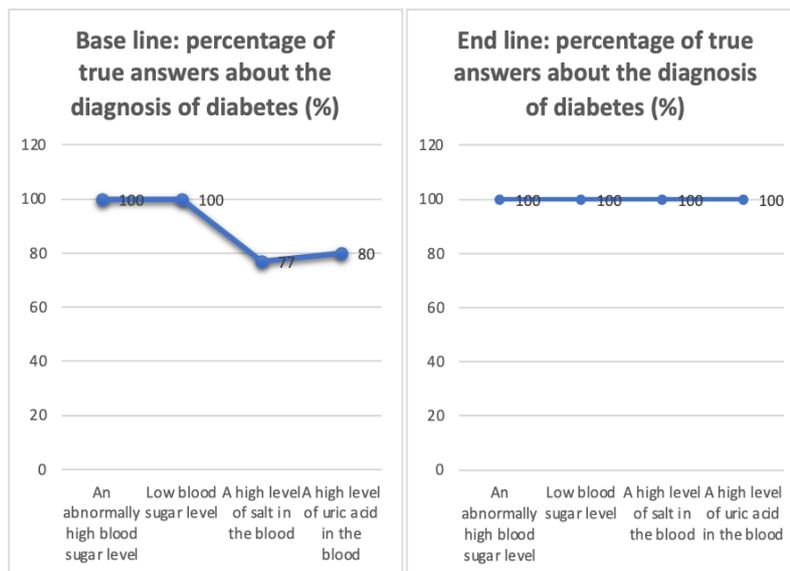
A questionnaire on theoretical knowledge and practical attitudes was drawn up and given to the targeted paramedics. An analysis was made after the data collection and the indicators were filled in to determine the initial situation of the project. The survey was conducted using an anonymous questionnaire. The 45 questions dealt with all aspects of the management and follow-up of diabetes: diagnosis, prevention, appropriate diet, complication, insulin treatment, oral antidiabetic treatment, equipping health center, referral, and counter-referral. The survey usually lasted 30 to 45 minutes and all information was collected confidentially. Respondents were questioned directly on their job place, and their informed consent was obtained before the interview. All the information was then compiled into a file for analysis and processing on SPSS software.

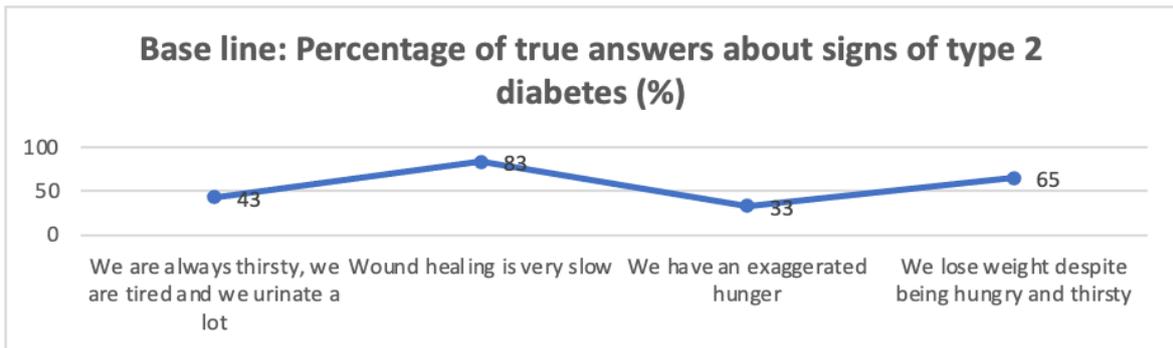
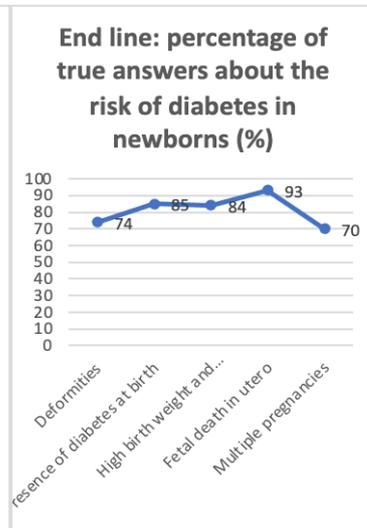
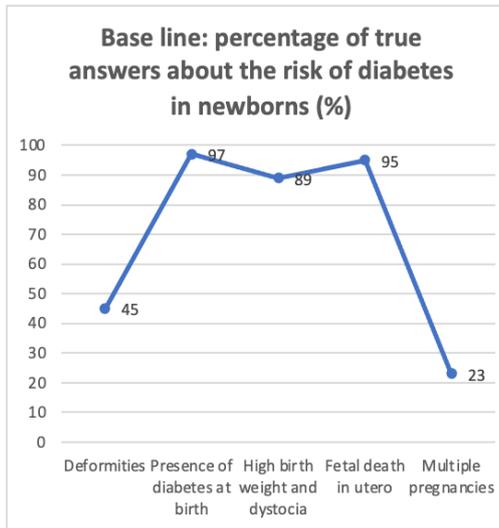
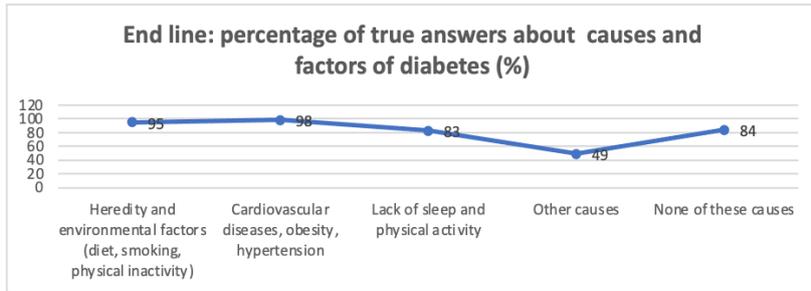
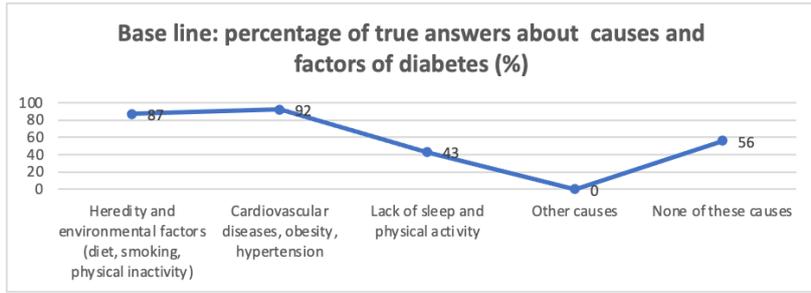
## RESULTS

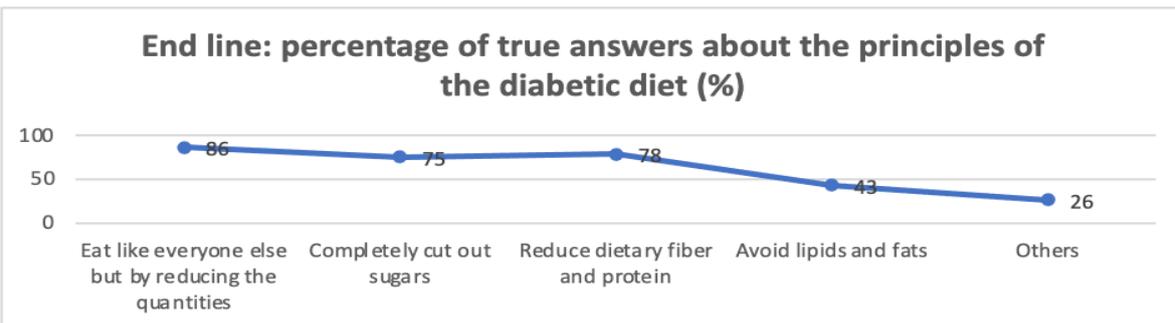
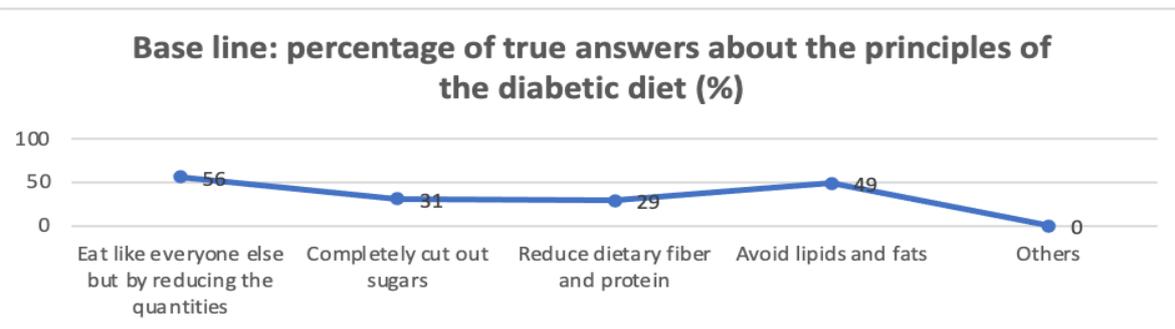
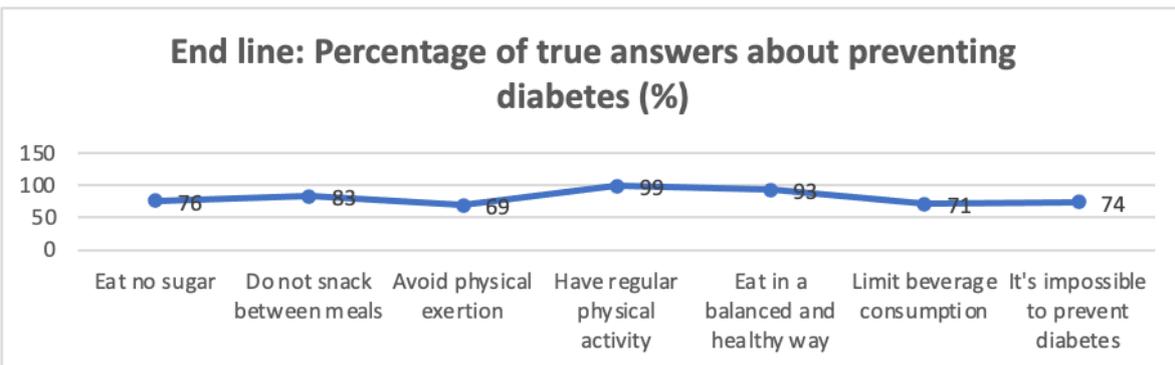
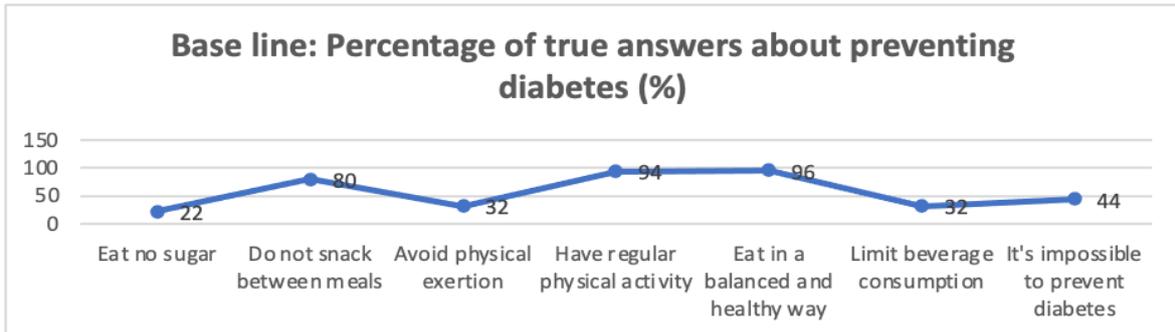
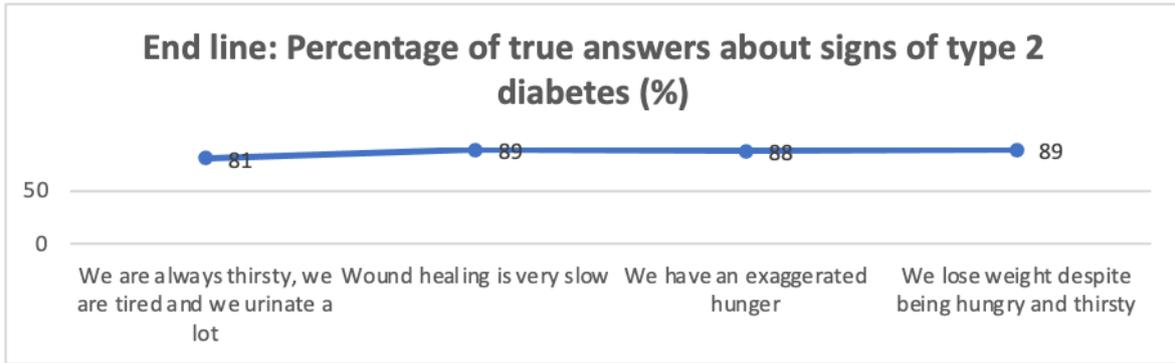
The results obtained are presented in several graphs. These graphs express the profile of the surveyed targets during the base line and end-line activities. They also express the percentage of correct answers given by the surveyed staff when faced with certain propositions, as well as the trends concerning several aspects of the management of the diabetic disease. These percentages are expressed comparatively for the base line and end line surveys, i.e., before and after the diabetes training.



The profile of the surveyed staff was substantially the same, predominated by state midwives, state-certified nurses, and nursing assistants.





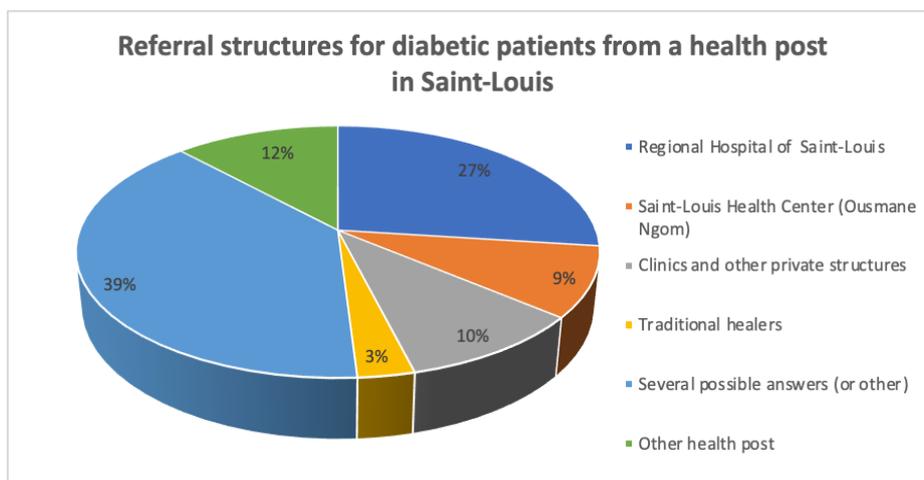
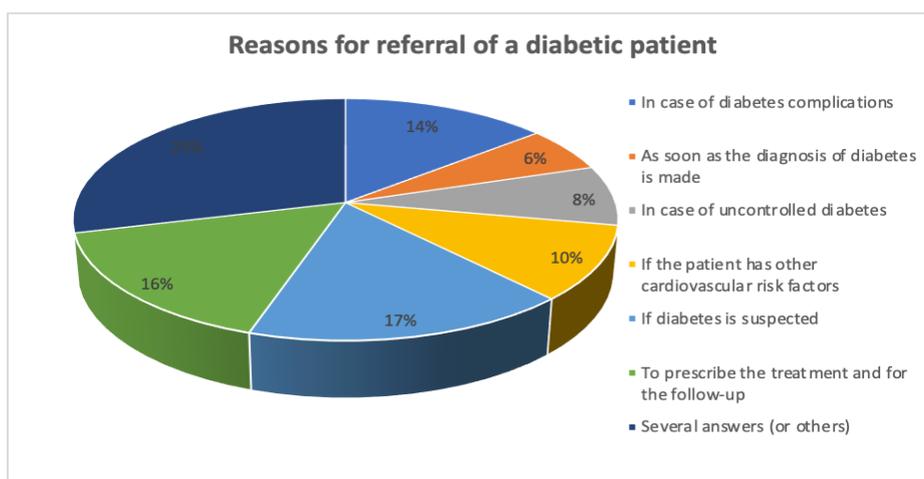


There is a marked improvement in the level of knowledge between the base line and end line surveys concerning the following aspects:

- Diagnosis of diabetes
- Differences between type I and type II diabetes
- Causes and factors of diabetes
- Risks of diabetes in newborns
- Signs of type II diabetes
- Diabetes prevention
- Principles of the diabetic diet

The data reported by the end-line survey also show an improvement in the level of knowledge around several aspects of diabetes and its complications:

- Treatment of type I diabetes
- Multiples misconceptions about diabetes
- The practice of fasting during Ramadan
- Conditions for taking blood sugar in the event of suspected diabetes
- Appearance of a small wound on the foot of a diabetic patient
- Presence of hypoglycaemia below 0.5 in a diabetic under treatment



It appears that concerning short questions with open answers providing information on the level of knowledge, answers were varied and revealed a very average level. For all questions, the general average of correct answers was 66.76% during the baseline survey. This general average rose to 82.4% during the end-line survey. Given the requirement in the level of knowledge of diabetic pathology, this questionnaire reflects many shortcomings. Indeed, even if for certain questions all respondents answered favorably, on other essential aspects of the management of diabetes, the answers were unsatisfactory.

The most incorrect answers were mostly about popular beliefs about the "cure" of diabetes, the effect of age and multiple pregnancies, and other diagnostic aspects of diabetes. During the end-line survey, an overall improvement in the level of knowledge was noted. Because even if some questions had an unsatisfactory rate of correct answers, this rate was rarely below 25%, contrary to the data reported by the baseline survey.

## DISCUSSION

Continuing medical education of health workers represents all the experiences that follow the initial training, and which help the nursing staff to maintain the skills necessary to provide health care or to acquire new ones. Continuing medical education therefore encompasses all forms of learning and not just refresher courses; it extends from the end of initial training until retirement. It covers knowledge but also a wide range of skills that have a direct relationship with the provision of health care. If we follow this definition, continuing medical education will reflect community health needs; it will lead to an improvement in the quality of health care and ultimately to an improvement in the health status of the community. This training is one of the pillars in the management of diabetes and chronic non-communicable diseases, and their share of mutilating complications.

Medical knowledge is dynamic and clinical performance decreases over time and after several years of practice. Continuing medical education plays an important role here. It is mainly done through theoretical courses, seminars, workshops, or congresses. Today, there is an improvement in communication, information technology and the emphasis are more on the individual practice of each practitioner and on their needs. Indeed, if we do not renew our knowledge, it is quickly obsolete and 50% would be obsolete in the space of 7 years [3, 5, 9]. If the health workers of the 2000s are put in the context of the knowledge of 2018, they will not only be helpless, but also bewildered and confused. The need to organize continuing medical education to maintain skills is a fundamental necessity both for clinical practice and for the quality of care provided to patients.

Today, medicine is constantly specializing in multiple ramifications, with the development of sub-specialties, particularly in university hospitals. Therefore, the practitioner must adapt his skills throughout his professional life because the trades evolve quickly. For example, since surgery has seen the emergence of laparoscopic surgery in the digestive field, the indications, knowledge, and know-how are different from what they entered with conventional surgery and require continuous upgrading. This need for continuing education is obvious for most health personnel, who constitute one of the professions most affected by the need for lifelong training. Due to its continuous specialization, and the dazzling progress that drives it, medicine has undergone a radical change in the organization of care over the past thirty years, under the effect of its collegialization. Indeed, recent years have seen several transformations in medical practices and patient behaviors, which contribute to making the practice of medicine more and more collegial [10,11]. Continuing medical education aims to improve knowledge and improve the quality of care and well-being of patients, particularly in the field of

prevention, as well as improving the consideration of public health priorities. Continuing medical training is therefore an obligation for paramedical personnel.

The results obtained following the baseline survey show that the level of knowledge of head nurses and other paramedical staff is relatively heterogeneous. The average level obtained from correct answers to the questions (66.76% during the baseline survey) reflects the lack of continuing education concerning diabetic disease in the department of Saint-Louis. It appears that in some aspects of the disease (such as diagnosis), staff knowledge is good. However, we deplore the lack of knowledge of paramedical staff on other aspects of diabetes: patient profile, diets, risk factors. These results are all the more worrying if we take into account the fact that in many cases, diabetic patients are in contact only with these paramedical personnel. This lack of knowledge was partially corrected by the project's training and supervision activities, since the rate of correct answers was increased to 82.4% according to the data from the end-line survey. Health workers are now more aware of the need to continue their training throughout their careers. Not only do they want to improve their own skills and competences, but the introduction of new techniques and equipment, as well as changes in health needs and in the very conception of health care delivery, also necessitate this training. The term "care giving" encompasses not only the curative treatment of the sick, but also a whole series of provisions designed to promote health and prevent disease [5, 7, 8, 11].

This staff training may be initiated by health workers themselves, by supervisors, by health system managers, or by professional associations, textbook publishers and pharmaceutical companies. This training can be done using written texts (newspapers, manuals, advertising), meetings, courses and conferences, or other methods [5, 7, 8]. Given the diversity of approaches, it is not surprising that the effectiveness of continuing education can vary. This is why it is normal that many countries are now convinced of the need to strengthen continuing education and also to improve it. What is learned in continuing education should be used to maintain or expand the skills needed for health care. This training must therefore meet three types of needs which are interrelated [4,5,6]: the needs of the population in terms of health, the needs of the health care system in terms of organization and individual needs of health workers training. Continuing education often fails to meet these conditions, for example when it prioritizes knowledge over skill, teaches the latest clinical and therapeutic advances without regard to available resources, or neglects to ground training based on a prior analysis of needs and existing programs. Continuing medical education is only satisfactory insofar as it focuses on solving real problems recognized by the community, the health system and health practitioners.

When it responds to the real needs of the community, the health system or the health worker, continuing education has three advantages [9, 10]. First, it is much more likely to have an impact on the way health care is delivered - which will result in improved community health. Second, because of the impact of training on health care, the cost of training will be justified by direct benefits. Finally, the meaning of continuing education becomes much more evident for the health workers themselves: they are much more willing to take part in such activities, to learn and to apply what they have learned in their daily work. These arguments relate more to the usefulness of continuing education than to the analysis of needs, but the two things are directly linked because continuing education can only be useful if it meets needs. Thus, needs analysis is an essential step for relevant programs. Another advantage of needs analysis is the basic data it provides on the provision of health care and the quality of the work of health workers. They can therefore be used as a basis for evaluating the continuing education program and determining whether changes have occurred in the areas considered [11-13].

There are different ways to assess the very wide range of needs that we have just presented. The methods that can be used for this purpose do not correspond exclusively to one or other of the categories of needs but can often be applied to different fields. Surveys can be used to establish and complete the health profile of a community. These surveys are generally based on a list of questions whose answers can provide objective and/or subjective information [6, 9, 13, 14]. Surveys are a very practical and popular way to obtain data on a particular issue within a group, community, or organization. Surveys can therefore effectively contribute to assessing continuing education needs in society, in the health system and in individuals. Surveys can be simple, inexpensive and quick to complete. A survey is often the only practical way to obtain certain types of information, for example people's perceptions of and reactions to illness, local health conditions, respondents' attitudes to regard to local health services and the perceived need to improve operations. Well-designed questionnaires and clear questions help ensure an adequate participation rate and reduce the number of ambiguous answers. The survey should become the instrument of all health service executives and trainers who need data on the community they serve and on those they train. But the objectives must be clearly indicated, the target group well defined and the difficulties realistically identified. Surveys are also useful for assessing the continuing medical education needed by various groups and workers within a health system [15, 16]. In our study, the base line and end line surveys proved to be very informative.

The outcome evaluation carried out so far will have shown whether the system and the health workers themselves can improve the quality of care. But one of the persistent problems of continuing medical education is that the knowledge imparted is not necessarily applied in a real situation [15-18]. This state of affairs may be due to several factors. Thus, the situation on the ground may differ to such an extent from the educational environment that it is more difficult, or even inappropriate, to implement the skills acquired there. For example, a practitioner who has been taught to record a patient's history in detail may find that he does not have the time in front of a large number of other patients. Another reason for not using new know-how may be that staff do not want to use it, for example because it requires too much effort or is unacceptable for some cultural, social or cultural reason [16, 17]. Remember that learning does not end with the educational experience. Trainees need extra time to 'digest' their new knowledge and also an opportunity to apply it before it becomes part of the sum of their skills. It will therefore be more realistic to allow at least one month to pass after the last learning experience before proceeding with the assessment.

## CONCLUSION

Continuing medical education encompasses the full range of learning experiences that enable health workers to improve their professional behavior in the delivery of health care. Applying a variety of teaching methods not only makes learning more interesting but also better meets the needs of different health workers and their different ways of learning. Diverse methods should be used to meet different types of training needs, not just refresher courses or seminars.

The assessment of the knowledge of nursing staff in the department of Saint-Louis that we carried out is instructive. It is part of a logic of improving knowledge of diabetic disease and its complications. As part of the project "Improving the management of diabetes and its complications in the department of Saint-Louis in Senegal", this assessment was a prerequisite for the training activities themselves. It provided information on the basic level of knowledge of paramedical personnel. It shows that in the peripheral health structures, the need for continuing medical education and retraining is real. If the public authorities and health authorities remain inactive in the face of this observation, this could have unfortunate consequences about the follow-up of diabetic patients in our department.

The general need for training will increase over the next decade. A very high proportion of health workers received their initial training relatively recently. In 10 years, many of those currently practicing will still be active and perhaps in more senior positions. However, their training will have aged 10 years. Therefore, the quality of health care available to the

world's population depends to a large extent on the quality of continuing medical education provided to health care personnel and access to this training. The computerization of training modules, the use of new information and communication technologies, and the involvement of all the actors concerned by the continuing medical education of paramedical personnel, can be as many avenues to explore in order to improve access.

**Conflicts of Interest:** The authors of this work declare no conflict of interest in relation to the writing of this article.

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