

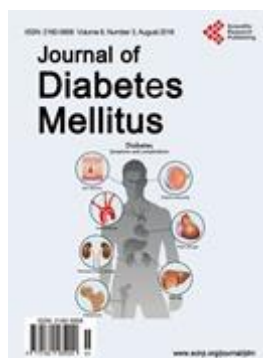
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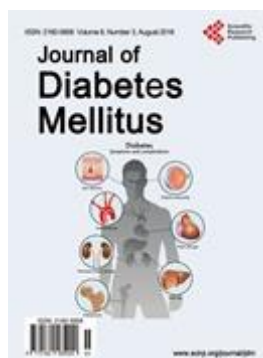
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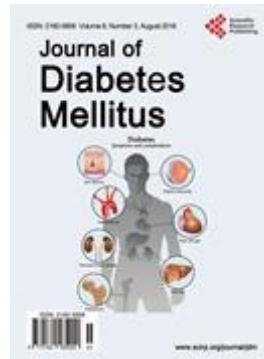
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Performance Evaluation of a Communication Plan Implementation for Behaviour Change in People at Risk of Type 2 Diabetes in the Commune of Tchaourou in Benin

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Abstract

Introduction: There are very few programmes to delay or prevent diabetes in Africa. This study aims to evaluate the communication plan implementation to reduce risk factors for Type 2 diabetes in people at risk. **Methods:** The cross-sectional evaluative study focuses on the resources used for the implementation of the programme, the activities carried out and the beneficiaries of the programme. The non-probabilistic method was used to select. All target populations under study with appropriate sampling techniques. The performance of the communication plan implementation for behaviour change was assessed through the three sub-variables of evaluation of Donabedian health programmes: structure, process and results. The components assessment was based on the Varkevisser scale. The performance of the communication plan implementation for behaviour change was obtained by the sum of the scores of the three sub-variables. **Results:** The performance of the communication plan implementation for behaviour change was satisfactory in all programme villages at 89%. The establishment of the research team, the management team and the technical team, the availability of financial resources on a timely basis, the follow-up of nutritionists, sports teachers and peer educators, the implementation of the programme package and the home coaching of the targets were effective in all the programme villages of the study. The scores for structure performance, process performance, and results performance were 100%, 95%, and 83.8%, respectively. The involvement of the entire research team, the commitment of local authorities and the motivation of the targets were also important in the obtained result. **Conclusion:**

This study shows that effective T2D preventive communication is possible at community level in Benin and probably in Sub-Saharan Africa.

Keywords

Implementation, People at Risk, Type 2 Diabetes, Benin

1. Introduction

To reduce Behavioural Risk Factors and modifiable biological risk factors for Type 2 diabetes (T2D), the setting up of a community programme represents one of the best inexpensive techniques to prevent the occurrence of Type 2 diabetes in at-risk people [1]. According to the International Diabetes Federation (IDF), one out of 10 people in the World suffers from diabetes [2]. For the World Health Organization, hyperglycaemias represents high blood pressure and smoking [3] the third risk factor for premature mortality. In Africa, a rapid growth of this disease prevalence is observed [4] and the continent will have the highest proportion of diabetics by 2035 [5]. At the same time, health structures have not undergone a significant development for adequate management of the disease. Moreover, preventive public health measures to contain this growth are slow to be put in place.

In Benin, STEPWISE surveys showed a rapid T2D increase from 2008 to 2015. In the same period, the prevalence of fasting hyperglycaemia increased from 2.6% to 12.4% in subjects aged 18 to 69 years [6] [7]. Borgou, one of the twelve regions of Benin, has the highest prevalence with a prevalence of fasting hyperglycaemia of 4.6% in 2008, while national prevalence was 2.6% [7]. In the same region, the prevalence of diabetes and fasting hyperglycaemia was 12.4% and 24.8% respectively in 2015 [6] [8]. In response to this situation, the Diabetes Prevention Project in Benin (Predibe), in collaboration with the World Diabetes Foundation, has implemented a type 2 diabetes prevention programme based on a communication plan for behaviour change based on the previously identified modifiable behaviours. This study aims to evaluate the performance of the implementation of this communication plan in people at risk of Type 2 diabetes in Tchaourou a Commune of Benin.

2. Framework and Methods

2.1. Study Framework

The study took place in the Tchaourou Commune located in the North East of Benin, West African country with the population is estimated at 11,810,324 inhabitants in 2019 with 51.2% women [9]. The Tchaourou Commune has 268,787 inhabitants [10]. It covers an area of 7256 km² or 28% of the total area of this Region and about 6.5% of the national territory [11]. The health sector is characterized by a low rate of health coverage at the commune level. This study is

part of a “PreDiBe” project initiated by the Ouidah Regional Institute of Public Health (CIHR) and the World Diabetes Foundation (WDF). The political and administrative authorities approved the implementation of the communication plan for a change of behaviour in the Tchaourou Commue, given the increasing evolution of the prevalence of diabetes in the Commune. The municipal council has included a budget line in the municipal development plan to raise awareness among community relays and village committees on risk factors and measures to prevent Type 2 diabetes. The main activities of this Commune are: the cultivation of food products (corn, sorghum, rice, cowberry, soybeans, peanuts, voandzou, yam, cassava) and especially of income products (cotton, cashews, shea nuts) [11]. The epidemiological diagnosis made in 2014 [12] in the populations of the Departments of Alibori and Borgou revealed, high blood pressure in 31.10%, overweight in 60.24%, alcohol consumption of 30.36% and tobacco use of 20.01% and 39.29% of physical inactivity.

2.2. Methods of Study

2.2.1. Type of Study

It was a cross-sectional evaluative study to assess the implementation of the performance of the communication plan developed by the PreDiBe project for behaviour change in people at risk of Type 2 diabetes. This performance was evaluated by combining the elements of two health assessment models. The New public Management model [13] which takes into account the effect, effectiveness, efficiency and satisfaction of all stakeholders of an programme and the Donabedian Model [14] includes the sub variables which are: the structure, process and results, the evolution of the political, economic, cultural and social environment.

2.2.2. Study Populations

- **At the structure level**

The study focuses on the resources used for the programme implementation:

- Financial resources;
- Human Resources;
- Infrastructure;
- Management material;
- Technical tools was described in **Table 1**;
- Communication tools;
- Technical equipment.

- **At the process level**

The study focused on the activities carried out, the beneficiaries of the study and the collaboration between the participants and the beneficiaries.

- 1) **Management activities**

They concerned:

- The research team setting up;

Table 1. Data collection techniques and tools.

Sub-variables	Elements of the sub-variable	Data collection techniques	Data collection tools
Structure	Financial Resources	Document exploitation (report)	Data processing sheet
	Human resources (actors of the intervention)	Interview	Guide Interview
	Technical tools	Observation	Observation grid
	Infrastructure	Observation	Observation grid
	Management materials	Observation	Observation grid
	Communication tools	Observation	Observation grid
	Activity Tracking Sheets	Observation	Observation grid
	Anthropometric Measurement Tracking Sheets	Observation	Observation grid
	Clinical Measures Tracking Sheets	Observation	Observation grid
	Technical equipment	Observation	Observation grid
	Monitoring sheets for biological measures	Observation	Observation grid
Process	Setting up the research team	Document exploitation (report)	Data processing sheet
	Setting up the management team	Document exploitation (report)	Data processing sheet
	Setting up the technical team	Document exploitation (report)	Data processing sheet
	Report writing	Document exploitation (report)	Data processing sheet
	Resource mobilization	Document exploitation (report)	Data processing sheet
	Training of actors	Document exploitation (report)	Data processing sheet
	Monitoring of nutritionists, sports teachers and peer educators	Document exploitation (tracking sheet)	Data processing sheet
	Nutrition education activity	Interview	Interview guide/educational sheets
	cooking demonstration activity	Observation	Technical diagrams
	Physical activity practice	Observation	Physical activity program Sheet
	Coaching of targets at home	Interview-Observation	Coaching activity sheet
	Relationship between actors and beneficiary	Interview	Interview guide
Results	Improved knowledge of stakeholders and beneficiaries	Questionnaire survey	Questionnaire
	Evolution of the number of participants in the sessions	Document evaluation	Attendance record for sessions (counting)
	Percentage of beneficiaries who participated in all activities	Document evaluation	Attendance record for sessions (counting)
	Effectiveness of the implementation of the communication plan	Document evaluation	Effect and Objectives Worksheet
	Efficient implementation of the communication plan	Document evaluation	Effect and ressources counting sheet

Continued

Beneficiary satisfaction	Interview	Interview guide
Stakeholder satisfaction	Interview	Interview guide
Satisfaction of the politico-administrative authorities	Interview	Interview guide
Taxpayer Satisfaction	Interview	Interview guide

- The management team setting up;
- The technical team setting up;
- The resource mobilization;
- The drafting of activity reports.

2) Technical activities

Its consist to:

- The training of participants;
- The monitoring of participants;
- The nutritional education for Target groups by nutritionists (the use of educational fact sheets and activity monitoring sheets);
 - The culinary demonstrations that were carried out for the target groups by nutritionists (technical diagrams and activity tracker);
 - The physical activity practice that was carried out for the target groups by the sports teachers (physical activity program sheet and Activity Monitoring Sheet);
 - The coaching of the beneficiaries that was carried out by nutritionists and peer educators (Activity Monitoring Sheet).

3) The beneficiaries of the programme are people at risk of Type 2 diabetes who are sensitized and trained to participate in the programme package (follow-up sheet of participants at the beginning and at the end of each activity session).

4) Collaboration between participants and beneficiaries

The relationship between the project participants and the beneficiaries was also considered.

- **Results level**

The study focuses on the level of improvement in the knowledge of the participants and the project targets, the motivation of the leaders, the evolution of the number of participants in the sessions, the percentage of targets that participated in all the activity sessions, then the changes achieved in the level of nutrition education and physical activity activities, the effectiveness of the implementation of the communication plan, the efficiency of the implementation of the communication plan, and then the satisfaction of the beneficiaries, participants, political-administrative authorities and taxpayers.

- **At the level of the political and socio-cultural environment**

The political and administrative actors of the Tchaourou commune were involved in the implementation of the communication plan. These are the communal development committee and the communal Development Council, the

Kings and traditional Chiefs.

2.2.3. Sampling

Sampling method

The choice of target populations for the study was based on the probabilistic method.

Sampling Technique

Exhaustive selection was used for the financial resources, technical tools, and communication tools. For Human Resources, the choice of the participants in the programme was reasoned while the convenience choice was used to select the beneficiaries of the programme package. The comprehensive choice was used for all programme activities.

Sample size

*For structure

The process evaluation sample consisted of:

- Three sources of funding (World Diabetes Foundation, Comlan Alfred Quenum Regional Institute of Public Health, Community of Tchaourou);
- The research team of five researchers;
- Three project managers (one project manager, one project coordinator);
- 15 political-administrative and religious authorities (the mayor of the commune, the first Deputy Mayor, the second Deputy Mayor, the General Secretary of the Commune, the coordinator of social promotion, four village chiefs, one King, four religious Chiefs);
- 52 participants in the programme (four nutritionists, two sports teachers, 35 health workers, a social worker, ten peer educators);
- Two infrastructures (an office at the town hall, a housing for nutritionists);
- One project document, 12 activity reports;
- 212 technical tools (4 growth charts, 4 scales, 4 tensiometers, 4 impedance meters, 4 feelers, 6 kitchen utensils - 10 fireplaces, 10 sets of pans, 10 buckets, 10 ladles, 10 skimmers - 4 sports grounds, 9 tape recorders, 90 sports outfits, 9 popular local music keys/USB);
- 20 communication tools (ten picture boxes, six fact sheets of nutritional education sessions, three technical diagrams of culinary demonstration, a physical activity program sheet);
- A follow-up sheet of the beneficiaries for each type of activity (nutritional education, culinary demonstration, physical activity practice).

*For the process:

The process assessment sample consisted of:

- The establishment of three teams (research team, management team and technical team);
- The mobilization of financial resources by the WDF, the IRS and the community of Tchaourou;
- Drafting of reports;
- Training of actors (four nutritionists, two sports teachers, two health work-

ers, one social worker, ten peer educators);

- The formation of political-administrative and religious authorities (the mayor of the commune, the first deputy mayor, the General Secretary of the town hall, four village chiefs, a king, four religious Chiefs);

- Training of the 90 beneficiaries of the programme (subjects at risk of Type 2 diabetes);

- Six quarterly nutrition education sessions and 48 weekly sessions;

- Six quarterly culinary demonstration sessions and 48 weekly sessions;

- 240 sessions of 30 minutes of individual daily physical activity;

- 52 one-hour sessions of physical activity (aerobic and abdominal movements) weekly group;

- 12 one-hour sessions (collective Walk) of monthly physical activity;

- A tracking card of beneficiaries at home;

- Supervision of participants.

***For results**

For the evaluation of the results, the sample consisted of:

- 90 subjects at risk, beneficiaries of the program;

- Four nutritionists;

- Two sports teachers;

- 35 health workers;

- A social worker;

- 10 pairs-educators;

- 12 political-administrative and religious authorities.

The Variables study

The main variable in this study was the performance of the communication plan implementation for the behaviour change based on the identified modifiable behaviours. It consisted of the following sub-variables:

- The structure performance;

- The process performance;

- The Results performance.

The sub-variable “the structure performance” is made up of the following components: financial support, human resources (the participants of the programme), infrastructures, management materials, technical tools, communication tools and their elements and the monitoring sheets of the different activities (**Table 2**).

The sub-variable “*the process performance*” components are: the management process quality, the technical process quality and the quality of collaboration between the project participants and beneficiaries and the elements resulting from it (**Table 3**).

The sub-variable “*Results Performance*” includes the following components and it derived elements: the competence level of: nutritionists sports teachers, peer educators, health workers, beneficiaries, the evolution of the participants number in the different activities, the obtained changes (new culinary demonstration practices,

Table 2. Score used for the “structure performance” sub-variable.

Sub-Variables	Components	Elements of the component	Appreciation Score
Structure	Existence of financial support	WDF	0 - 1
		IRSP	0 - 1
		Community	0 - 1
	Infrastructure	Tchaourou Town Hall Office	0 - 1
		Management team accommodation	0 - 1
	Management materials	Registers	0 - 1
		Reports	0 - 1
	Technical tools	Growth charts	0 - 1
		Scales	0 - 1
		Sphygmomanometers	0 - 1
		Impedance meters	0 - 1
		sentissouple	0 - 1
		Kitchen utensils	0 - 1
		Basic foods for cooking demonstrations	0 - 1
		Sports field	0 - 1
		Tape recorders	0 - 1
		Key/USB	0 - 1
	Communication tools	Picture Boxes	0 - 1
		Nutrition Education Fact Sheets	0 - 1
		Technical diagrams of culinary demonstrations	0 - 1
Physical Activity Program Sheet		0 - 1	
Target tracking sheets	Follow-up sheets for nutrition education	0 - 1	
	Follow-up sheets for cooking demonstrations	0 - 1	
	Anthropometric Measurement Tracking Sheets	0 - 1	
	Clinical Parameter Tracking Sheet	0 - 1	
	Clinical Parameter Tracking Sheet	0 - 1	
	Biological Parameter Tracking Sheet	0 - 1	
Total			0 - 26

reduction of high-calorie meals in favour of vegetables, the practice of at least 150 minutes of physical activity, per week, reduction of tobacco use and alcohol consumption) the effectiveness and efficiency of the communication plan implementation and the satisfaction of all stakeholders (Table 5). Tables 2-4 present the criteria for assessing the performance components of the communication plan implementation for behaviour change based on the identified changeable behaviours.

Table 3. Score of the sub-variable “process performance”.

Sub-Variables	Components	Elements of the component	Appreciation Score
process	Setting up the research team	Five International Researchers (four nutritionists, one public health researcher)	0 - 1
		Ten national researchers (two public nutrition researchers, four epidemiologists, one socio-anthropologist, one health economist, one statistician)	0 - 1
	Setting up the management team	A Research and Project Coordinator	0 - 1
		A general supervisor	0 - 1
		A project manager	0 - 1
		An accountant	0 - 1
		A project coordinator	0 - 1
	Setting up the technical team	A doctoral student	0 - 1
		Three nutritionists	0 - 1
		Two sports teachers	0 - 1
		Ten peer educators	0 - 1
	Resources mobilized on time	WDF	0 - 1
		IRSP	0 - 1
		Community	0 - 1
	Report writing	Report writing	0 - 1
	Training of actors	Tool standardization	0 - 1
		Training on mastering the content of nutrition education themes	0 - 1
		Training on how to conduct a nutrition education and cooking demonstration session	0 - 1
		Training on the content of sports activities	0 - 1
	Follow-up with nutritionists, sports teachers and peer educators	Quarterly supervision of nutritionists, sports teachers and peer educators	0 - 1
			0 - 1
	Implementation of nutrition education activities	Mobilization of local and religious authorities	0 - 1
		Gathering in a public place of the members of a sub-group of targets	0 - 1
Bringing in posters, education sheets, picture boxes		0 - 1	
Development of a nutrition education theme		0 - 1	
Answers to possible questions		0 - 1	
Organization of cooking demonstration sessions	Gathering of ingredients	0 - 1	
	Song of cheerfulness and encouragement towards better health (in local language)	0 - 1	
	demonstration sessions	0 - 1	

Continued

Organization of physical activity sessions	Daily sessions	0 - 1
	Weekly Sessions	0 - 1
	Monthly Sessions	0 - 1
Coaching targets at home	Presenting the benefits of the changes in cooking and exercise to each participant in their homes	0 - 1
	Follow-up at home for cooking demonstrations and physical activities and adjustment as needed.	0 - 1
	Encouragement and motivation to practice lessons learned	0 - 1
Total		0 - 35

Table 4. Score for the “results performance” sub-variable.

Sub-variable	Component	Elements of the component	Score
Results	% of nutritionists able to conduct nutrition awareness and education activities	Presence of a training sheet for nutritionists	0 - 1
		Presence of nutritionists' evaluation sheet at the pre-test	0 - 1
	% of sports teachers able to supervise beneficiaries for physical activities	Presence of a training sheet for sports teachers	0 - 1
		Presence of sports teachers' evaluation sheet in the pre-test	0 - 1
	% of peer educators able to do outreach monitoring	Presence of peer educator training sheet	0 - 1
		Presence of peer educator evaluation sheet	0 - 1
	of health workers able to manage diabetic subjects	Presence of a training sheet for health workers	0 - 1
		Presence of health worker assessment sheet	0 - 1
	% of informed and motivated leaders	Presence Leader Awareness Sheet	0 - 1
	- % beneficiaries who use the new culinary demonstration practices	- 80% of the beneficiaries use the new culinary demonstration practices.	0 - 1
	of beneficiaries who reduced high-calorie meals in favour of vegetables	- 80% of the beneficiaries reduce high-calorie meals in favour of vegetables	0 - 1
	- % of beneficiaries who practice at least 150 minutes of physical activity per week	- 80% of the beneficiaries practice at least 150 minutes of physical activity per week	0 - 1
	- % of beneficiaries reduced tobacco and alcohol use	- 60% of beneficiaries reduced tobacco and alcohol	0 - 1
	- % Rate of perception of beneficiaries on the conduct of the sessions	- 80% good perception of the beneficiaries on the conduct of the sessions	0 - 1
	- % of satisfied respondents	- % of satisfied respondents	0 - 1
	Effectiveness of the implementation of the communication plan	% compliance between the objectives set and the effect achieved	0 - 1
Efficient implementation of the communication plan	% of adequacy between the means made available and the effect obtained	0 - 1	
% satisfaction of beneficiaries	% satisfaction of beneficiaries	0 - 1	

Continued

% of satisfaction of the actors	% of satisfaction of the actors	0 - 1
% of satisfaction of the political-administrative authorities	% of satisfaction of the political-administrative authorities	0 - 1
% of taxpayer satisfaction	% of taxpayer satisfaction	0 - 1
Total		0 - 21

2.2.4. Performance Measurement and Assessment

The process performance sub-variables of the implementation of the behaviour change communication plan (**Figure 1**) were operationalized through the scores assignment. Two score scales were used. A score of “1” is assigned when the criterion is present and “0” when the criterion is absent. The sum of the scores of the each component elements determines the total of each sub-variable. The assessment of the sub-variables was made according to the Varkevisser rating scale: “good” (if the score is above 80% of the highest score); “acceptable” (if the score is between 80% and 60% of the highest score) and “poor” (if the score is below 60% of the maximum score) [15]. The implementation performance of the behaviour change communication plan was obtained by summing the scores of the three sub-variables. Thus, the total score for the “structure performance” sub-variable is 0 to 26 (**Table 2**); 0 to 34 for the “process performance” sub-variable (**Table 3**) and 0 to 20 for the “outcome performance” sub-variable (**Table 4**).

2.2.5. Ethical Advice and Approvals

The guideline was approved by the ethics committee of the Benin Ministry of Health, the authorization of the coordinator of the Tchaourou Regional hospital and the communal administrative authorities.

2.2.6. Data Analysis

The observation of the analysis document, transcription of semi-structured interviews and group discussions helped for the development of a detailed programme account. The implementation performance of the communication plan was assessed by summing the scores of the three sub-variables of the main variable. The activities achievement level was assessed by Varkevisser standards.

Commentary on the Conceptual Framework

The implementation performance of the communication plan for behaviour change communication in subjects at risk of type 2 diabetes was achieved through structure performance, process performance and outcome performance while taking into account the political, economic, social and cultural environment.

3. Results**3.1. Description of the Sample**

This study included project managers (project manager, project coordinator, RPHI research team), one PhD student, three nutritionists, two sports teachers,

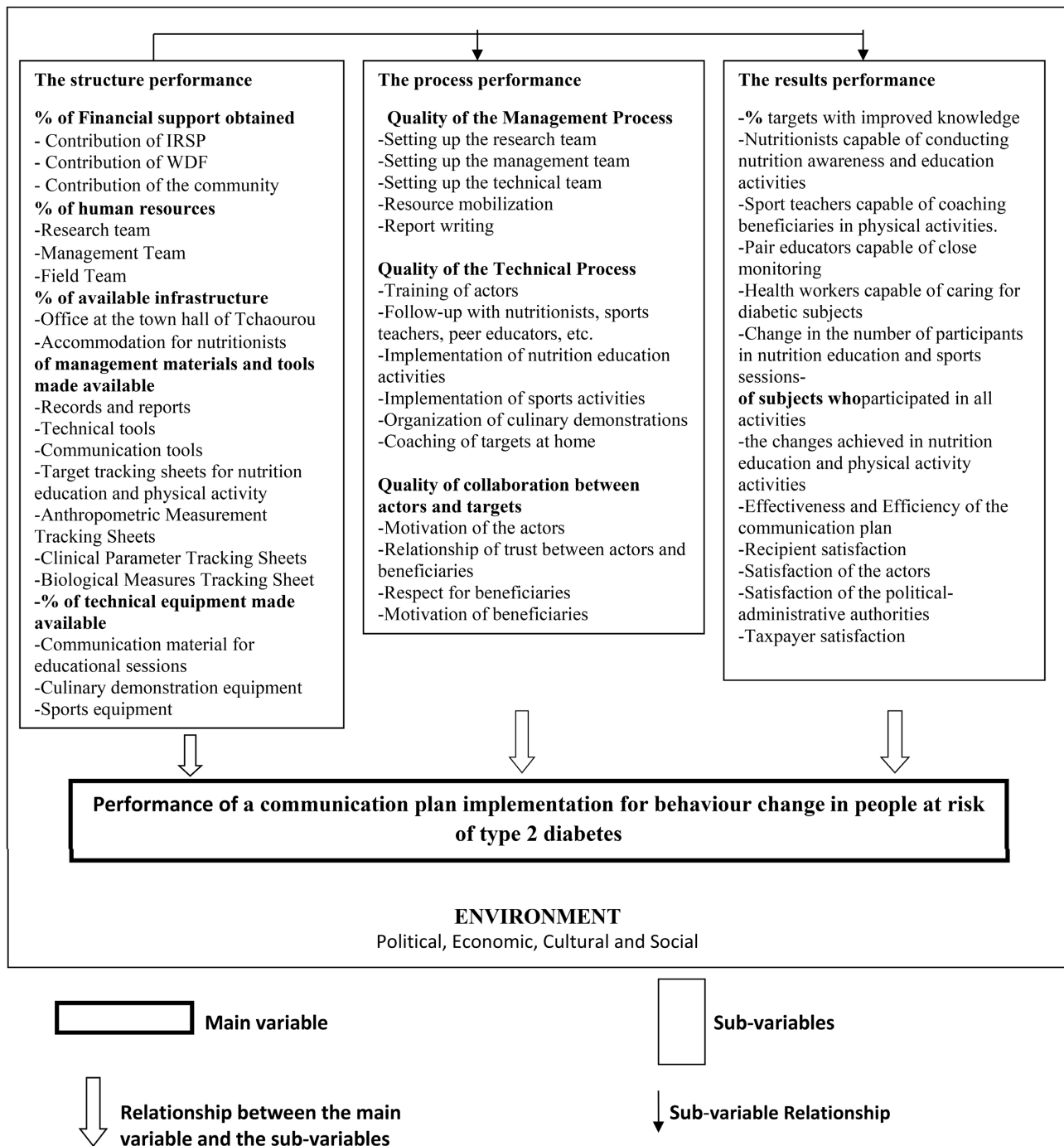


Figure 1. Conceptual framework of the study.

two health workers, one social worker, four sports fields, four tape recorders, four keys/USBs of popular local music, six nutrition education sessions, six culinary demonstration sessions, 240 individual daily physical activity sessions, 52 weekly group physical activity sessions (aerobic and abdominal movements), 12 monthly group physical activity sessions and 90 beneficiaries of the programme (people at risk of type 2 diabetes), political-administrative authorities and taxpayers.

3.2. Characteristics of the Programme Beneficiaries

The programme involved a sample of 90 people, 70% of whom were women. The participants were on average 40 ± 9 years old with low (76.7%), medium (14.4%) and high (8.9%) levels of education. The study sample consisted of shopkeepers (43.3%), farmers (17.8%), housewives (8.9%), craftsmen (6.7%), civil servants (5.6%), pensioners (4.4%) and other socio-professional categories (13.3%). The socio-economic level of this target population was high for 37.0%, medium for 37.2% and low for 25.6%; 78.9% were married or living with a spouse, 11.1% were widowed or divorced and 10% were single or engaged living alone.

3.3. Description of the Level of Knowledge of the Programme Participants and Beneficiaries and Their Degree of Collaboration

The level of knowledge about diabetes (symptoms, complications and prevention) of the programme beneficiaries was assessed through a questionnaire has increased from 32% to 92%. Participants also benefited from training and the post-test revealed a high level of competence of: nutritionists, sports teachers and peer educators. Furthermore, the appropriation of the approach by the beneficiaries and local communal authorities testifies to the quality of friendly collaboration and mutual respect between the programme participants and beneficiaries.

3.4. Description of the Components of the Implementation Performance of the Communication Plan for Behavior Change

Description of the “structure” component

Table 5 presents the elements of the “structure” component. All the technical management tools, communication tools, target monitoring tools, infrastructure and financial support existed at the start of the programme.

Description of the “process” component

Table 5 also shows the elements of the process component. The setting up of the research team, the setting up of the management team, the setting up of the technical team, the availability of financial resources at the right time, the follow-up of nutritionists, sports teachers and peer educators, the implementation of the programme package and the home coaching of targets were effective in at least 95% of the expected score.

Description of the “results” component

Table 5 presents the elements of the results component. These were the first results obtained one year after implementation of the programme.

3.5. Determination of the Overall Performance of the Implementation of the Behaviour Change Communication Plan

Table 6 shows the overall performance of the process of implementing the

Table 5. Sub-variable score for the evaluation of implementation of a communication plan the behaviour change.

Sub-variables	Components of each sub-variable	Expected Score	Score obtained	Percentage
Structure	Existence of financial support	3	3	100
	Infrastructure	2	2	100
	Management materials	2	2	100
	Technical tools	9	9	100
	Communication tools	5	5	100
	Target Tracking Sheet	5	5	100
	TOTAL		26	26
Process	Setting up the research team	2	2	100
	Setting up the management team	5	5	100
	Setting up the technical team	4	4	100
	Resources mobilized on time	3	3	100
	Report writing	1	1	100
	Training of actors	4	4	100
	Follow-up with nutritionists, sports teachers and peer educators	14*	14*	100
	Implementation of nutrition education activities	30**	30**	100
	Organization of culinary demonstration sessions	18***	18***	100
	Organization of physical activity sessions	240	205	85
	Organization of daily physical activity sessions	52	47	90
	Organization of physical activity sessions weeklies	12	12	100
	Organization of physical activity sessions Monthly	360****	347	96
TOTAL		727	692	95
Results	Nutritionists capable of conducting nutrition awareness and education activities	6	6	100
	Sport teachers able to coach beneficiaries for physical activities	4	4	100
	Peer educators capable of close monitoring	18	18	100
	Health workers capable of caring for diabetic subjects	35	35	100
	Informed and motivated leaders	4	4	100
	% beneficiaries using the new culinary demonstration practices	90	82	91
	% reduction in high-calorie meals in favour of vegetables	90	80	89
	% of beneficiaries who practiced at least 150 minutes of physical activity per week	90	73	81
	% of beneficiaries who reduced tobacco use	90	62	69
	% of beneficiaries who reduced alcohol consumption	90	59	65
	% of beneficiaries who participated in all planned activities	90	72	80
	Rate of good perception of beneficiaries on the conduct of the sessions	90	80	89

Continued

% satisfaction of beneficiaries	90	90	100
% of satisfaction of the actors	65	65	100
% of satisfaction of the political-administrative authorities	15	15	100
% of taxpayer satisfaction	01	01	100
TOTAL	835	713	85,4

Table 6. Performance score for the implementation of a communication plan for behaviour change.

Villages	Performance of the structure		Process performance		Performance of results		Total Performance		Appreciation
	Observed Score	% score	Observed Score	% score	Observed Score	% score	Observed Score	% score	
Tchourou	26	100	714	98.2	714	94.7	1454	96.5	Good
Tchatchou	26	100	679	93.4	597	79.2	1302	86.3	Good
Tékarou	26	100	690	94.9	580	76.9	1296	86	Good
Worogui	26	100	685	94.7	637	84.4	1348	89.4	Good
Intervention group	104	100	2768	95.1	2528	83.8	5400	90	Good

behaviour change communication plan. The overall performance is good for all (90%) of the villages with a record of 96.5% for the village of Tchaourou.

3.6. Testimonies of Project Stakeholders

3.6.1. Beneficiaries

- **Improving health well-being:** “Ms. Kochoni Marthe is a support group leader called Iwossan (which means Healing in ‘Nago’ a local language) from the Tchalla district of the village of Tchaourou centre. Before the project started in May 2015, she was overweight and unwell, and was taking medication to help her recover. During the activity sessions, explanations and advice were given on the disease and its management. So she committed herself to mobilizing the group members for the effective implementation of the lessons learned during the educational and physical activity sessions. Since then, she has been organizing herself and the others to play sports on the basketball court of the Tchaourou stadium every day. She feels lighter every time she comes back from sport. I have stopped taking my medication since then and my weight has gone down; I’m very happy.” she says!
- **Changing cooking habits:** “Mrs. CODO Prisca is a member of the group called Fifamè (which means in Peace) from Sinankpassor district of the village Tchatchou centre. She says: before the project arrived, she used to prepare the sauce with a lot of oil. Moreover, she supported the idea that it is the oil that makes a good vegetable sauce. She also used enough salt. ‘I noticed that a spoonful of oil was added to the sauce at the end of cooking. Also the onion was used to precook the leaves. The cube (sodium glutamate) was re-

placed by mustard, shrimp and small fish as well as garlic. I repeated the same way of cooking at home and to a group of teachers. The teachers liked it and it saves me money. I'll adopt this way of cooking forever because my whole family will be healthy.”

3.6.2. The Politico-Administrative Authorities

The commitment of the mayor of the commune and his council to work for social mobilization for the diabetes prevention activities: *“I commit,” said the Mayor of Tchaourou during the advocacy workshop, “to make funds available from the communal budget to organize an awareness session for the commune’s 2000 relays and village nutrition committees on the signs, risk factors of diabetes and means of prevention, in order to support mobilization; I support this project 100%”.*

“I’m General Secretary of the Commune. I didn’t know the risk factors for diabetes. Following the screening organised by Dr AZANDJEME at the beginning of the project, I was classified as a high-risk subject for diabetes. I was also hypertensive. I had been prescribed bundles of medication. But I started to review my diet and balance it by eating vegetables and fruits. I started dancing early in the morning from midnight to two o’clock or sometimes from two to four o’clock in the morning. My big belly started to shrink. I haven’t taken any medication since then. I have been saved by the coming of this project.”

3.6.3. The Contributors or Donors

I am Mrs. Suzanne OLEJAS, Project Coordinator of the World Diabetes Foundation for West Africa.

In 2016 when I visited the four programme villages after the project was set up in the department of Borgou in the commune of Tchaourou “I was very satisfied with the implementation of all the elements planned by the PreDiBe project. I did not expect such a good implementation of the project, the involvement of the local authorities and such a great commitment of the beneficiaries. I am convinced that the project will bear satisfactory fruit.”

4. Discussion

This study assessed the performance of the implementation of the behaviour change communication plan through the three components of Donabédian’s conceptual framework combined with the New Public Management model: “structure”, “process” and “outcomes”. The level of performance in the implementation of the behaviour change communication plan in subjects at risk of type 2 diabetes appeared to be satisfactory.

Three sampling techniques were used for target selection. The exhaustive choice was used for financial resources, human resources, technical tools, communication tools and activities carried out; the choice for convenience was used for the beneficiaries of the programme package and the reasoned choice for the

political-administrative authorities and contributors. The data collection techniques used were in line with the sampling techniques selected.

The enthusiasm and commitment of the beneficiaries are real and palpable. As proof, local activity management committees have been spontaneously set up in each village. This committee plays a decisive role in mobilizing the beneficiaries, monitoring activities, ensuring group cohesion, and making sure that materials are used wisely.

In this study, we noted the existence of all the technical management tools, communication tools, target monitoring tools, infrastructure and financial support that existed at the programme beginning. One of the determining elements of this completeness is the availability of all listed resources in the project document. Our results are consistent with those published by Aziz & al., and which, after an evaluation study of a type 2 diabetes prevention programme implementation in Australia in 2018, have concluded that our implementation was carried out as planned in the project document [16].

The setting up of: the research team, the management team and the technical team was the main advantage in the implementation of the communication plan for behaviour change. In addition, the involvement of all stakeholders in the implementation, especially the motivation of peer educators, nutritionists and sports teachers, was an important factor that boosted the activities so that the programme package could be carried out. The involvement of peer educators (from the community itself) at all stages of the programme increased the confidence of the study participants in the practice of the programme activities. This justifies the 80% participation rate in all programme activities. Moreover, this participation rate reflects the participants' willingness to respect the new approaches proposed. At the end of our investigations, the performance of the implementation of the communication plan for behavioural change has a good appreciation. This can be explained by the involvement of the entire research team, the commitment of the local authorities and the motivation of the targets, according to the high prevalence of type 2 diabetes in the locality. The disease is already known by the subjects at risk who sometimes have cases of diabetes with whom they live. It should also be noted that the training of nutritionists, sports teachers and peer educators on nutrition education topics, support for subjects at risk of type 2 diabetes in physical exercise, motivation and follow-up of subjects at home, have also made it possible to achieve these results.

By analysing the obtained results during this work, we have identified favourable and unfavourable factors for the learning retention of PreDiBe's. Among the favourable factors, we noted the existence and functionality of a support committee made up of peer educators and a few volunteers motivated to continue the activities of the programme, which guarantees the sustainability of the activities. Another main advantage of this study is the low drop-out rate of the beneficiaries of the programme. Aziz & al., reported in an evaluation study of the implementation of a programme to promote healthy lifestyle habits in subjects with type 2 diabetes, a programme in which peers were involved, gave a

92.7% retention rate in Australia in 2018 [16]. Another lifestyle programme study conducted in subjects at risk for type 2 diabetes showed a participation rate of more than half of the subjects after 18 months of programme [17]. A shortfall was noted in the availability of vegetables, but this was addressed by another component of the project that provided training in home gardening practices. The testimonies confirming the good implementation of the communication plan for behaviour change show the involvement at all levels of the different stakeholders of the project.

5. Conclusion

The results of this study suggest that community-based programmes for people at risk for type 2 diabetes based on changing unhealthy behaviours are feasible and acceptable, it can help to get a positive impact on the people at risk for type 2 diabetes lifestyle. The satisfactory evaluation results will bring to better understanding the programmes implementation in people at risk for replication of future programmes in other similar situations.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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