



MATERIAL MANAGEMENT IN NURSING SERVICES: ORGANIZATION DEVELOPMENT STUDY*

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ABSTRACT

In order to provide quality services in the field of health practices, the resources allocated to materials as well as manpower should be used effectively. In this respect, it is known that the most consumed materials of health services are pharmaceuticals, medical consumables and most of these materials are applied by nurses. In nursing services, managing nurses should be able to provide quality health services with good method and control of resources. In this direction, nurses should take an active role in the realization of the change to the benefit of the organization with the necessary practices and controls.

The aim of this study was to determine the problems experienced in the management of clinical drug&medical consumables in a public hospital nursing services, and to ensure that the drug management procedures for solving these problems were revised and implemented by all clinical nurses.

Prior to the study, regular interviews were conducted with permission from the Hospital Management. The problems and requirements related to the drug&medical consumables method of the institution are determined and the activities to be done to eliminate them are planned.

As a result of this application, clinical based pharmaceutical&medical consumables management of nursing services, job analysis of responsible nurses, related job descriptions were determined, related procedures were arranged. Implementation was carried out to ensure drug&medical consumables management, unit warehouses were carried out with record controls over both physical warehouse and hospital information management system warehouse module. It is recommended that this practice be developed to cover other nursing practice areas within the institutional framework.

Key words: Nurse, medication, material management, organizational development, medical consumables

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1.INTRODUCTION

1.1. Organization Development

Organizational development is the process of developing the internal capacity of an organization which is very effective in maintaining its long-term existence and accomplishing its mission (Ünüvar & Bektaş, 2017).

Organizations' effectiveness, adaptation to change, supervision, etc. reviewing and reconstructing strategies, structural features and procedures in order to eliminate the problems that arise over time (Şencan, 2008). According to Cummings, organization development; states that it is a process that uses behavioral sciences to strengthen, develop and change strategies, structures and processes that enable organizations to be effective (Cummings & Worley, 2008). Organizational development is a managerial activity aimed at ensuring the planned changes in the organization in a planned way and includes different parts of the organization (Helvacı 2008).

The benefits of organizational development can be listed as follows:

- ✓ It creates an open problem-solving climate in which everyone can take part in the organization.
- ✓ It increases the productivity of both the organization and the individuals.
- ✓ It creates trust among individuals and groups for the employees of the organization.
- ✓ In the rewarding system, it provides a structure that can fulfill the development of individuals and the basic functions of the organization.
- ✓ It increases the ability of individuals to control and direct themselves within the organization.
- ✓ Develops an understanding that emphasizes the innovative attitude of managers.
- ✓ Allows the organization to develop its mission and vision.
- ✓ It helps the organization to adapt to changing environmental conditions (Öktem & Kocaoğlu, 2012).

Organizational development involves a repetitive process consisting of several stages. However, each organization development process has to include the following five stages. These are; diagnosis, selection and design of agents, implementation of the tool, evaluation and adaptation and protection of the system. The "diagnostic" stage of organizational development is to determine the current state of the organization. The problems in the organization and what causes these problems are defined. Any person, or group working in the organization may be the cause of the problem. At this stage, activities such as surveys, interviews, direct observations, document and report analyzes can be carried out to gather information to identify problems and situation (Helvacı, 2008). In the second stage, "selection and design of intermediaries and designs, suggestions and alternatives about how to solve problems" are detected. Alternative proposals are succeeded on which mediators should be used for these alternatives.

In the third stage, which of these alternative solution proposals or which "decisions to be implemented" are suggested. The application is implemented. Since the development of the organization basically includes practices aimed at changing human behavior, it is not possible to get an immediate result during the implementation phase. The changes that are expected to occur in the attitudes and behaviors of the employees within the organization require

considerable time and effort. As with all managerial activities, "evaluation" is the fourth stage. During the evaluation phase, it is checked whether the desired planned change has been realized. Planned change needs to be well analyzed and elaborated in order to make the evaluation stage correct in organizational development. In the last stage, if the applied method is successful, it is decided to continue and to maintain and adapt to the system and to carry out "preservation activities" (Helvacı, 2008). At the end of the targeted organization development program, if the desired situation is not reached, then the problem persists. Information is collected again for this problem. Thus, the organization development program will be started again (Dinçer, 2007; Bumin, 2003).

1.2. Materials Management in Health Care

Today, the roles and functions of health institutions are expanding. This situation leads to structural complexity of health institutions and makes management difficult. Charles Austin, in his work "What is Health Administration", stated that Health institutions management is a management discipline specific to the field of health services, and therefore, examining all aspects of health services from the perspective of business administration, which is developed to meet the management requirements emerging in the field of "health, discipline". Although the concept of business is emphasized at first glance, the concept of business is rational use of resources (Kavuncubaşı & Yıldırım, 2018). The regulation of health services with the development of value creating industries should be evaluated from a holistic point of view considering the costs of national health services (Karahana, 2009).

In order for hospitals to continue their services without interruption, they need two important resources: manpower and materials. These two sources are important in the hospital budget as expenditure groups (Göktepe, 2014). In order to provide quality health services, hospitals have to use the resources allocated to materials in addition to manpower effectively (Uzuntarla et al., 2015). The effectiveness of the two mentioned elements will ensure the quality of the service provided. Materials: medicines (tablets, capsules, solutions, ointments, etc.), medical equipment (bandage, hydrophilic cotton, syringe, suture material, etc.), non-medical material (bed sheets, covers, linen, stationery, etc.), equipment (tables, beds, refrigerators, generators, transportable parts such as vehicles that can be used for years), installations (such as buildings that can be used for years can not be moved)) is understood (Eren, 2016). In this context, the requests of the hospitals to have the materials they want ready for use at any time creates the need for stocking. Because of this need, hospitals, regardless of their size, face some problems with the control and management of stocks. Having very little stock in hospitals leads to the risk of failure to meet the expectations of health services as it will lead to possible service interruptions. Excessive stock in hospitals (causing increased losses as a result of theft and deterioration) may cause the financial structure to be adversely affected due to the capital attached to the stocks (Eren, 2016; Karagöz & Yıldız, 2015). With cost-benefit analysis, material efficiency can only be achieved by a well-structured inventory management (Aytekin, 2009; Uzuntarla et al., 2015). Organizations have to develop policies that minimize stocking costs by balancing service efficiency and customer demands (Collier, 2009). Stocks should be controlled with a central and good monitoring system, unnecessary storage of materials should be prevented and coordinated operation of functions should be ensured by identifying lost materials (Göktepe, 2014).

The purpose of stock management, which means material management, which has a very important place for hospital enterprises; means to have the right material, at the right time, at the right amount, at the right cost and at the right place (Aytekin, 2009). Cost reduction can be

achieved through careful use and protection of materials and equipment, such as reducing costs and performing stock controls. Control of material inventories, purchase requests, storage can help in determining long and short term inventory costs (Tomey, 2009).

The scope of material management; is to purchase, carry out stock control, follow up material movements and, delivery, distribution and storage functions. It is a process that includes planning, purchasing, acceptance, storage, stock planning and control of the materials required for the hospital and waste utilization or recycling for the environment. Material management is an organizational structure that enables more efficient planning, coordination and control of all material activities in the process before the actual use of materials. The scope of material management is wide. It includes planning activities and material requirements, purchasing, obtaining the necessary materials and resources, presenting the materials to the organization and materializing their status as valid assets, and storing the materials in the right place and at the right time to meet the need for used material. Their responsibility starts with the planning of the material need and ends only when the materials are used successfully (Uzuntarla et al., 2015).

There are many important reasons for stocking as low as possible. These include: minimizing wear-out factors such as life-span and depreciation of materials, easier inventory control, reducing losses during storage, taking measures against possible production inefficiencies, reducing transportation and labor costs during access and storage, reducing the number of corporate warehouses. and saving time and reducing alternative costs due to capital investment (Kamauff, 2009; Türk & Şeker, 2011).

The fact that material expenses have an important ratio in total operating expenses reveals the importance of material management for enterprises (Göktepe, 2014). The impact of material management on the company's profits is even more striking. A small reduction in material costs greatly increases the profitability. In a research conducted by the American Management Association; As a result of effective purchasing and material management, an annual savings of 2% leads to a 10% increase in operating profitability, while a 10% decrease in material expenses results in a 52% increase in profitability. A significant portion of the profit is realized at the time of purchase. Operating profit increases by 20-30% if appropriate supply is provided (Uzuntarla et al., 2015). Similar studies in the literature have shown that the cost of materials and medicines in hospital institutions is 10% -15% of the total annual costs (Kaptanoğlu, 2013). Taking into account that the annual costs of the hospital subject to the research is 50-60 million TL, the importance of the study will become more clear (Karagöz & Yıldız, 2015).

No health program can run without material management. Good material management ensures the optimal use of the limited resources available and thus minimizes the negative consequences of deficiencies or degradation (Eren, 2016).

3. Materials Management in Nursing Services

In nursing services, managing nurses can ensure the quality and supervision of nursing services with good management of resources. Nurses play an important role in the implementation of care and in determining the financial impact of the materials and equipment used. Thinking in terms of cost and the development of cost awareness is of great importance for all nurses and nursing practices (Yoder-Wise, 2007). In this context, nurses have an important position in accessing medicines, medical consumables etc. which are involved in patient care and treatment processes and have to examine and evaluate the materials purchased and used (Nobiling, 2010). It is stated that the most common expenditure items in nursing budgeting are salaries, materials and equipment (Nobiling, 2010). The inventory of pharmaceuticals and medical consumables constitutes an important part of the hospital's expenditure items.

Although the concepts of budgeting, cost and material management are important in terms of nursing services applications, they are not fully understood by the nurses or their value is not

known. The studies created in this direction will help nurses to be more effective in their work habits, decision making, financial management, communication with employees, access and sharing of scarce resources (Göktepe, 2014). With the evaluations made within this scope, the needs of hospitals to develop themselves and their services emerge. In order to meet this requirement, organization development studies are used (Seren & Baykal, 2003).

2. MATERIALS AND METHODS

In order to decide the general framework of the study and to get support in planning the study, firstly, regular interviews were conducted with the permission of Hospital Management. The problems and requirements related to the drug and medical consumables method of the institution were determined and the activities to be done to eliminate them were planned. Method: Prior to the study, permission was obtained from the Hospital Management and regular interviews were conducted. The problems and requirements related to the drug and medical consumables method of the institution are determined and the activities to be done to eliminate them are planned. Qualitative and quantitative research methods and descriptive research design were used in the research. In this study, pharmaceutical and medical consumables stock management in all clinical areas in a public hospital is examined as a process and process definition, process improvement and process improvement techniques are discussed with brainstorming and 5 W1H. The Action Plan for this study is given in Annex I and Annex 5W1H. The user group consists of nurses and medical secretaries responsible for unit-based pharmaceutical and medical pharmaceutical materials management. Microsoft Office Word and Excel programs were used during the study.

3. RESULTS - Status Analysis

Material management considers all processes that develop from procurement of materials to consumption by end users as a process. In this context, workflows should be determined, the materials should be recorded in every environment where they are physically present and kept within the framework of stock management principles. Again, inventory management will be controlled, effectively, reducing unnecessary material usage, accurately determining the material needs of the past by clearly identifying the material consumption in the past, and reducing the costs of the stock and ensuring the exact recording of the medical equipment used for the patients, ensuring the correct reflecting of the material costs used in the treatment.

Problem Analysis: The medical warehouse (pharmacy) operate in the hospital between 08-17 working hours. Outside office hours, the need for medication and medical supplies from the clinics is reported to the supervising nurse. The supervisor opens the pharmacy with the nurse on duty officer and delivers the medication or medical consumables to the service, and the records of the materials taken from the pharmacy are sent to the Director of Health Care Services (researcher) and to the responsible pharmacist. The Director of Health Care Services realized that this was happening frequently and the pharmacist responsible for the opening of the pharmacy was notified frequently. On this issue, the Director of Health Care Services asked the supervisor nurse a report on the dates, which clinics and for which materials they had to open the pharmacy. According to the report, it was seen that the pharmacy was opened at different times in order to meet the material (drug, serum, etc.) requirements of all clinics, including specialty units that have intermediate storage facilities. Upon this situation, it was determined that all clinics' warehouses were de facto controlled and the stock controls of the material warehouses were not carried out and were not followed up. In all clinical areas, the number and material type seen on the Hospital Information Management System (HIMS) inventory module does not match the number of existing warehouses. Unused drugs, discontinued treatment or drug returns are not made daily (no refunds are made) among the

services. Materials circulation, lock and count controls of emergency ambulances were not registered, and medication were stored in different areas of the clinic in the nursing rooms of physicians and nurses without any temperature-humidity control. Almost all clinic were in the same condition.

Taking Action: The current situation was communicated with the Hospital Management. It was decided to establish an organizational development group consisting of nurses who were thought to support the change and have the power to influence other nurses. Hospital Health Care Services Manager, Coordinator nurse, Hospital Quality and Productivity Director and researcher, "Nursing Services Pharmaceutical and Medical Consumables Management Development Group" is planned to be established. The results of the job analyzes will first be examined in this group under the supervision of the researcher, and then a drug management procedure will be planned under the guidance of the researcher. With this organization development team, necessary studies have been planned in line with the Ministry of Health, Health Quality Standards-HQS Hospital Pharmaceutical Management. In this context, it is stated that there should not be any drug stores in all clinical areas except in intensive care units, in emergency room and in operating rooms etc. and that medical consumables should be kept in a maximum of 5 days in all areas, minimum, maximum and critical stock levels should be determined and revision of their definitions over (HIMS). In this direction, the transfer of excess drugs and materials in the areas was planned by negotiating with the pharmacist responsible for medical depot and medical consumables depot officer. It is planned to return the identified above-stock materials (if there is no defined warehouse, all non-use material) to the central warehouses via (HIMS) warehouse module.

It is aimed to optimize stock levels of clinics. A common consensus was reached that the pharmacy, which was opened frequently after working hours, should not be opened unless it is necessary for the safety of the drug (it cannot be found in any clinic, etc.). Within this scope, providing the clinics with intermediate storage facilities such as emergency service or intensive care unit with 5-day stock under the coordination of supervisor for orders of inpatients (or changing) after working hours, and producing solutions for supplying medicine and medical supplies through inter-unit warehouse transfer decision. It was decided that all responsible nurses and supervisors should be trained in accordance with the procedure established for drug and medical consumables management. In order to update the information of all working nurses, it was decided to organize internal HIMS warehouse module trainings. It is planned to define the storage areas, to determine the sketches, to carry out the temperature and humidity controls, and to prevent the storage of out-of-site material with frequent inspections. In general, the revision of the Drug Safety procedure is planned within the framework of Health Quality Standards.

Activity plan and intervention

"Action plans" have been prepared in line with the activities determined in the solution of the problems experienced in the inventory management of pharmaceutical and medical consumables in the unit warehouses. A meeting was held with the organization development group "Nursing Services Pharmaceutical and Medical Consumables Management Development Group" in order to review the activity plan and the changes to be made for the last time. The decisions were reviewed and the opinions were evaluated by determining whether there were different opinions against the change. Decisions determined during the action phase were communicated to the Chief Physician of the Hospital and compliance was obtained. First of all, the activity plans were shared with all the nurses in charge of the clinical area and the decisions

taken were put into practice. Material delivery processes to pharmacy and medical consumables warehouse have been completed.

Evaluating results

Each step and every aspect of the clinics were evaluated by evaluating the stages of drug and medical consumables management. With the data to be obtained at this stage, it may be decided to go back to the planning stage in order to proceed to the next stage of the process or to make certain corrections. In the evaluation of the results, it is also important to get the opinions of the interested parties. Because the change plan and the execution of the plan with the relevant people, the results of the evaluation is required together. This situation will also contribute to the development of participatory management approach in the enterprise (Dinçer, 2008; Ekinci, 2011). In this context; process evaluation meetings were held with the researcher, organization development group "Nursing Services Pharmaceutical and Medical Consumables Management Development Group" and related responsible nurses. Necessary arrangements were made through the HIMS stock modules and physical warehouse controls in the areas.

Application controls were provided with the researcher during the working hours and supervisor nurses determined after the working hours with Nursing Services Pharmaceutical and Medical Consumables Management Development Group and subjected to in-service training in this field. In the evaluation of the applications, "Clinical Based Drug and Medical Consumables Management Evaluation Form" developed in line with the literature was created and the process was followed closely. Application integrity between clinics was ensured.

End of organizational development program

The management of the nurses and the clinics to which they are responsible, weekly warehouse checks and organization development group "Nursing Services Pharmaceuticals and Medical Consumables Management Development Group" by organizing monthly visits and the integrity of the application was observed by closely monitoring the material management process. However, a 3-month evaluation process was planned in order to monitor sustainability closely. In this three-month evaluation process, it was decided that the organization development program should be terminated in case of compliance with the activities.

4. CONCLUSIONS AND RECOMMENDATIONS

As a result of this practice, clinical-based drug and medical consumables management of nursing services, job analysis of responsible nurses and related job descriptions were determined and procedures for drug management and medical consumables management were arranged. Pharmaceutical and medical consumables management is provided by the procedure. Application integrity between clinics was ensured. It is recommended that this practice be developed to cover other nursing practice areas within the institutional framework.

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Material Management in Nursing Services: Organization Development Study

ADDITIONAL I SWIH					
What to do?	Why?	How?	Who-whom?	Where?	When?
The hospital manager will be interviewed and official permission will be obtained for the study and information flow will be provided in certain periods.	By obtaining information and permission of the executives about the process, by providing ease of application, in order to avoid problems in the supervision and regulation of pharmaceutical and medical	The implementation steps of the application will be discussed with face to face managers in advance.	Hospital Manager and Health Care Services Manager (Researcher)	In the administrative unit of the hospital	08.03.2019 10.04.2019 02.05.2019
Hospital clinical medicines and medical consumables management procedures will be examined and their compliance with the literature will be evaluated and necessary arrangements will be made.	Analysis of clinical drug management	Field evaluations of drug and medical consumables management of all responsible nurses, polyclinic, clinic, emergency, operating room, intensive care unit nurses will be made	All responsible nurses, polyclinic, clinic, emergency, operating room, intensive care unit nurses- Researcher	At hospital	11.03.2019
Creating an activity plan	To determine the workflow	Determining the activities in the solution of the problems experienced in the inventory management of pharmaceutical and medical consumables in the unit warehouses.	Researcher	In the administrative unit of the hospital	12.03.2019
Establishment of the organization development group "Nursing Services Pharmaceutical and Medical Consumables Management Development Group"	An organization development group consisting of nurses who are thought to support the change and have the power to influence other nurses will be formed.	Assignment to the organization development group consisting of Quality Director and Coordinator nurse in the hospital	Researcher- Hospital Quality Director and Coordinator nurse	In the administrative unit of the hospital	12.03.2019
Organizational development group Meeting with "Nursing Services Pharmaceutical and Medical Consumables Management Development Group"	The activity plan was prepared with the "Nursing Services Pharmaceutical and Medical Consumables Management Development Group" which is the organization development group in order to review the changes for the last time.	A meeting was held and the action plan was revised in line with the decisions taken.	Researcher- Hospital Quality Director and Coordinator nurse	In the administrative unit of the hospital	12.03.2019
Examination of clinical drug and medical consumables management processes according to procedures	To determine the reliability of the data, to identify the situations that are overlooked	The results of the job analysis will first be examined in this group under the supervision of the researcher and then the job descriptions created by the researcher will be discussed.	Nursing Services Pharmaceutical and Medical Consumables Management Development Group - Researcher	At hospital	15.03.2019
Clinical medicines and medical consumables management procedure will be updated and regulated	To make the nurses working in the institution more aware of their roles in clinical drug management and to work more systematically and regularly	Performance criteria and performance evaluation form will be established under the guidance of developed procedures and job descriptions in this scope	Nursing Services Pharmaceutical and Medical Consumables Management Development Group - Researcher	At hospital	16.03.2019
Communicating team meetings with clinically responsible nurses and starting activities	Implementation in line with the activity plan	Implementation in line with the activity plan	Nursing services pharmaceutical and medical consumables management development group, Researcher- All responsible nurses	At hospital	20.03.2019 ile 23.03.2019
Training of clinical drug and medical consumables management procedures	To ensure that all nurses learn the drug and medical consumables warehouse management procedure and apply the procedure	Training	Nursing services pharmaceutical and medical consumables management development group, Researcher- All responsible nurses	At hospital	20.03.2019 ile 23.03.2019
Performance evaluation of clinical drug and medical consumables management	Ensuring the continuity of applications	Consistency assessment for inventory follow-up by counting performance evaluations through system and field controls. In this context, the "Clinical Based Pharmaceutical and Medical Consumables Management Evaluation Form" developed in line with the literature to ensure the control of the areas.	Nursing Services Pharmaceutical and Medical Consumables Management Development Group, Supervisor Nurses, Researcher- All Responsible Nurses	At hospital	20.04.2019- 24.04.2019
Ensuring sustainability	3-month evaluation process is planned to closely monitor sustainability. In this three-month evaluation process, it was decided that the organization development program should be terminated if the activities were found to be eligible	Clinical Based Drug and Medical Consumables Management Evaluation Form to ensure the control of the field.	Nursing Services Pharmaceutical and Medical Consumables Management Development Group, Supervisor Nurses, Researcher- All Responsible Nurses	At hospital	10.07.2019
Project Reporting	Sharing the results with the top management and recording the organization development activities in the field	Preparation of the report of all activities recorded systematically in writing	All Hospital Management- Researcher	At hospital	31.08.2019

ADDITIONAL II				
	Logic / Structure of the Study	Verifiable Indicators	Verification Resources	Assumptions / Risks
General Purpose	Ensuring that drug and medical consumables management is carried out in hospital clinics safely and accurately in accordance with the procedures	Drug and medical consumables warehouse minimum, maximum and critical stock quantities to determine the correct warehouse compliance / consistency ratio error rate from 28% to a minimum of 95% to increase	Hospital Information Management System warehouse screens	Necessary measures should be taken in terms of drug safety and control of medical consumables
Special Purposes	Ensuring that responsible nurses act in accordance with the procedure of all nurses working in the clinic in drug management	Ensuring that the drugs are complete and complete in the process of receiving them from the pharmacy	Lack of drug reporting during seizure hours.	Error 0 (zero) cannot be reduced because it is a human factor.
Expected Results	Manage pharmaceuticals and medical consumables in clinical areas, minimize errors, increase productivity, ensure effective cost management	* Revision of procedures and training, revision of stocks (min. Max and critical stock levels) in the first month, return of surplus drugs to pharmacy, return of medical consumables to medical consumables warehouse, and regulation of physical structures of warehouses * Increased awareness of employees * Pharmaceutical and medical consumption management Active use of the procedure	Hospital Information Management System and weekly reports received * Numerical values * Physical storage conditions	Errors due to system-related problems
Activities	* Drug management and medical consumables warehouse management procedures * Training Program	Hospital Information Management System weekly and monthly reports * Numerical values * Physical storage conditions	Evaluation and follow-up of the reports, controller Clinical Based Drug and Medical Consumables Management Evaluation Form "to ensure the control of the areas.	* This issue should not be handled by the responsible nurses in unit orientation trainings for the nurses who have just started the institution. * Pharmacy and medical consumables warehouse problems caused by the business processes

Material Management in Nursing Services: Organization Development Study

ADDITIONAL III						
MATERIAL MANAGEMENT IN NURSING SERVICES: AN ORGANIZATION DEVELOPMENT STUDY						
ACTIVITY PLAN	1st MONTH (March 2019)	2nd MONTH (April 2019)	3rd MONTH (May 2019)	4th MONTH (June 2019)	5th MONTH (July 2019)	6th MONTH (August 2019)
Problem Detection	08.03.2019					
Determining the Subject of the Study	08.03.2019					
Literature Search	08.03.2019	15.04.2019				
Meeting with the Manager	08.03.2019	10.04.2019	02.05.2019			
Hospital clinical drug and medical consumables management procedure, physical fields and literature review, evaluation of compliance with the literature	11.03.2019					
Creating an activity plan	12.03.2019					
Establishment of the organization development group "Nursing Services Pharmaceutical and Medical Consumables Management Development Group"	12.03.2019					
Organizational development group Meeting with "Nursing Services Pharmaceutical and Medical Consumables Management Development Group"	12.03.2019					
Examination of the procedures of clinical drug and medical consumables management processes	15.03.2019					
Clinical drug and medical consumables management procedure updated and regulated	16.03.2019					
Communicating team meetings with clinically responsible nurses and starting activities	20.03.2019- 23.03.2019					
Training of clinical drug and medical consumable management procedures	20.03.2019- 23.03.2019					
Monitoring of results	20.03.2019	20.04.2019				
Evaluation of results		20.04.2019- 24.04.2019				
Ensuring sustainability						
Project Reporting						31.08.2019
	Completed	In Progress	Not Started			