UNITED NATIONS DEVELOPMENT PROGRAM

REPORT ON
EVALUATION OF IMPLEMENTING THE GRASSROOTS TELEMEDICINE PROJECT USING THE SOFTWARE DOCTOR *for everyone*

CONTENT

LIST OF ABBREVIATIONS **5**

I. INTRODUCTION **6**

II. OBJECTIVE **7**

III. METHODOLOGY **8**

3.1. Evaluation Design 8

3.2. Time and location of the Evaluation 8

3.3. Method and content of information collection 8

IV. RESULTS **10**

1. Legal basis and the economic and social context and health conditions of the provinces/cities participating in the Project 10

1.1. Legal basis of the Project *10*

1.2. The social - economic conditions of the provinces/cities participating in the Project *10*

1.3. Health and healthcare conditions of the provinces/cities participating in the Project *11*

2. Implementation process and results of the Project 12

2.1. Project management, administration and communication *12*

2.2. Building software and ensuring information technology infrastructure *13*

3. Social impact of the Project on the beneficiary areas 23

3.1. Impacts on health workers and health facilities at district and commune levels *23*

3.2. Impact on the local health network *25*

3.3. Impact on people *25*

V. CONCLUSIONS AND RECOMMENDATIONS **28**

Conclusions 28

Recommendations: 29

REFERENCES **30**

Vietnamese 30

English 30

LIST OF TABLES

Table 1. Summary of Evaluation content 8
Table 2. Summary of Information Collection Methods 9
Table 3. Information on socio-economic conditions of the intervention provinces 11
Table 4. Some indexes of health and healthcare conditions of provinces 12
Table 5. List of documents and activities of Project management 13
Table 6. Objects and features for users.....14
Table 7. Errors or unsuitable features of the software“Doctor for everyone” 15
Table 9. Number and percentage of health workers trained in “Doctor for every home” software by professional title and line of work.....18
Table 10. Number and percentage of health workers who are not satisfied with the software training courses “Doctor for everyone” 21
Table 11. Results of remote medical consultation and treatment implementation on the software “Doctor for everyone”.....21
Table 12. Reasons why health workers have never used the software “Doctor for everyone” 22
Table 13. Contents of professional work health workers have used the software “Doctor for everyone” to perform.....23
Table 14. Benefits for health workers when using the remote medical examination and treatment application “Doctor for everyone” 23
Table 15. Difficulties of health workers when using the software “Doctor for everyone”.....24
Table 16. Benefits for people when the software “Doctor for everyone” 26
Table 17. Difficulties of people when using software “Doctor for everyone” 27

LIST OF FIGURES

Figure 1. Percentage of units trained in the software “Doctor for everyone” compared to the number of units participating in the Project.....16

Figure 2. Percentage of health workers at the district and commune levels who have participated in training 16

Figure 3. Proportion of trained health workers by lines 17

Figure 4. Percentage of health workers trained by number of training sessions.....17

Figure 5. Proportion of male/female medical staff trained in the software “Doctor for all” compared to the workforce participating in the Project 19

Figure 6. Percentage of health workers who are ethnic minorities trained in the software “Doctor for every home” compared to the workforce participating in the Project 20

Figure 7. Percentage of health workers who have used the software “Doctor for everyone” 22

LIST OF ABBREVIATIONS

MOH	The Ministry of Health (MOH)
IT	Information Technology
HW	Healthcare worker
DPoH	Provincial Department of Health
HC	Health Center
HS	Health Station
UNDP	United Nations Development Program

I. INTRODUCTION

Healthcare system at grassroots level plays an important role in providing primary healthcare services for people, to ensure that all people receive basic health care at the lowest cost and most effective. In order for everyone to access to quality medical services and health care at the facility, over the years, the Government, the Ministry of Health and localities have synchronously implemented many solutions in order to gradually invest, improve facilities and medical equipment, supplement and improve the quality of human resources, gradually improve the quality of grassroots health services in the localities, contributing to improving the quality of human resources, quality of care and treatment for patients, reduce the rate of referral patients, and reduce overcrowding in upper-level hospitals, especially in rural, mountainous, remote areas and areas with difficult socio-economic conditions.

In the context of the COVID-19 pandemic, the United Nations Development Program (UNDP) has coordinated with the Ministry of Health to implement the project on grassroots telemedicine using the software application "Doctor for everyone". This is a remote medical consultation, examination and treatment support system developed based on the web platform and smartphone application to enhance the quality of medical consultation, examination and treatment at the grassroots level, increase access to health services for the people, and improve the capacity of health workers at the grassroots level. This application provides the connection among healthcare workers at the commune health station and the people in order to disseminate medical information, schedule an appointment at the commune health station and provide remote consultation services, and at the same time allowing healthcare workers at health stations to receive professional help from healthcare workers at hospitals, district health centers or higher levels through video calls. The project has been implemented in two phases, from August 2020 to June 2021 (Phase 1) and from July 2021 to June 2022 (Phase 2) in 03 provinces of Ha Giang, Bac Kan and Lang Son.

In order to evaluate the effectiveness, to find out the inadequacies and difficulties in the implementation process and the ability to maintain and expand the Project in the next stages, thereby proposing recommendations and solutions, the United Nations Development Program (UNDP) has coordinated with the Ministry of Health to carry out the "***Evaluation of implementing the grassroots telemedicine project using the software "Doctors for everyone"*** in three provinces of Ha Giang, Bac Kan, Lang Son.

II. OBJECTIVE

General objective

To assess the suitability, effectiveness, feasibility and find out the difficulties and inadequacies in the implementation process, the sustainability and the replicability of the project on telemedicine "Doctors for everyone" at grassroots level, built and implemented by UNDP in collaboration with the Ministry of Health in three provinces of Ha Giang, Bac Kan and Lang Son, thereby providing recommendations and expanding application in the future.

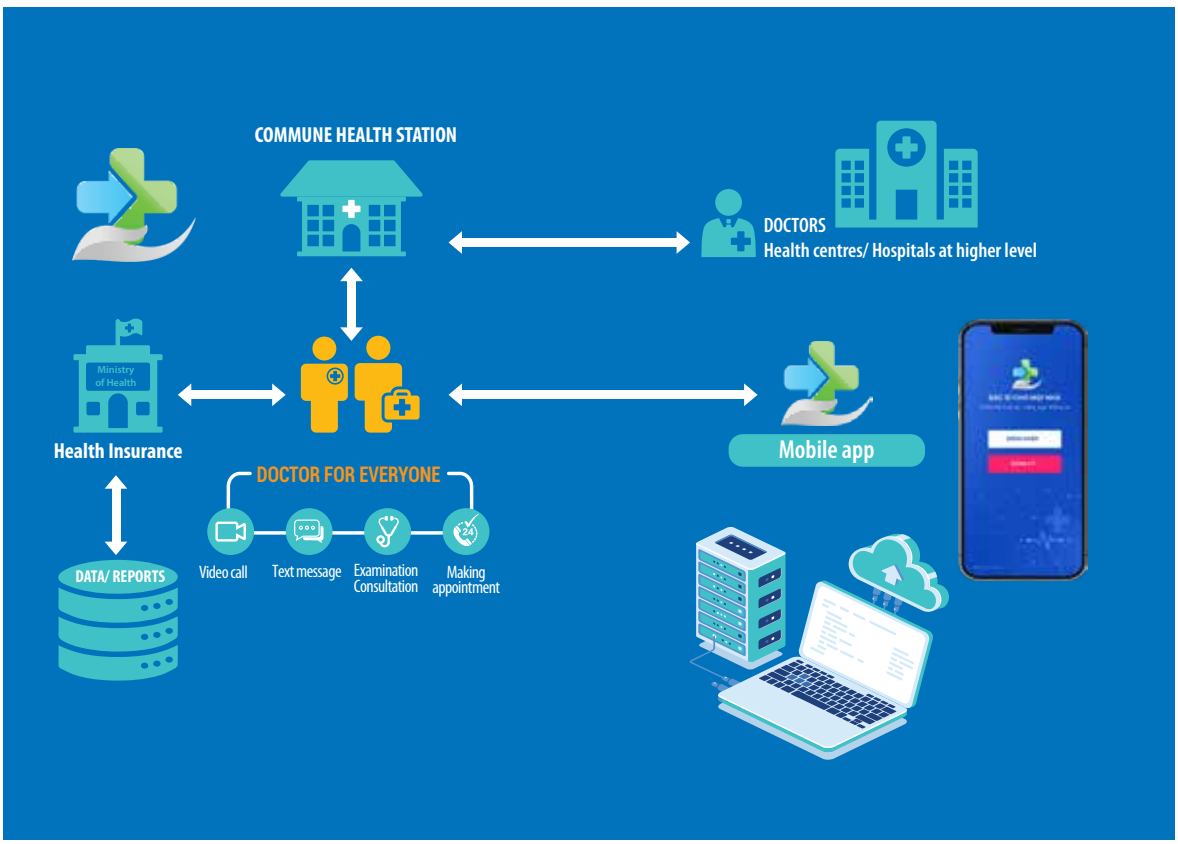
Detailed objective:

1. To evaluate of the implementation process and achieved results of the application of telemedicine project "Doctor for everyone" at grassroots level;

2. To evaluate the difficulties and inadequacies of deploying the application for telemedicine project "Doctor for everyone" at grassroots level;

3. To find out the social impacts of the Project on the beneficiary areas;

4. To propose some solutions to improve efficiency, ensure proficient sustainability and expand the software at the grassroots health level in the coming time.



III. METHODOLOGY

3.1. Evaluation Design

The evaluation used a cross-sectional descriptive study design, combining quantitative and qualitative research methods.

3.2. Time and location of the Evaluation

Time: May - June 2022

Location: In three provinces of the project, including Ha Giang, Bac Kan, and Lang Son. In each province, 01 district has been selected. In each district, 01 commune has been selected for evaluation. Thus, totally 03 districts and 03 communes have participated in this evaluation.

3.3. Method and content of information collection

Table 1. Summary of Evaluation content

Content	Evaluating index
Evaluation of project management and operation	Pre-deployment survey; assessment and lessons learned after the project Implementation monitoring The media Advantages and disadvantages in management and administration
Assessment of IT infrastructure assurance	Level of assurance of IT equipment Level of transmission guarantee The relevance of the software "Doctor for everyone" Advantages and disadvantages of investment and preparation of IT infrastructure
Evaluation of training on how to use the software "Doctor for everyone"	Number of units, health workers trained Level of satisfaction with the method and content of training Applicability after training Supervision and support after training Advantages and disadvantages during training and implementation after training
Evaluation of the implementation of using "Doctor for everyone" software for remote medical examination and treatment	Number of installations, manipulations or errors in the process of using the software Number of units and health workers who have used the software for meetings and remote professional support Advantages and disadvantages in the process of using "Doctor for everyone" software for remote medical examination and treatment
Evaluation of social impact of the Project	Impact on the people Impact on health workers Impact on medical facilities Impact on central and local management agencies

Table 2. Summary of Information Collection Methods

Method	Object	Workload
Qualitative method		
In-depth interview or focus group discussion	At the provincial level: In-depth interviews with leaders and staff of the health department (1 interview) In-depth interview with leaders of Provincial General Hospital (1 interview) At the district level: In-depth interview with the leader of the district health center/general hospital (1 interview) At the commune level: Group discussion of commune health station staff (1 session) People group discussion (1 session)	2 interviews/province x 3 provinces= 6 interviews 1 interview/province x 3 provinces= 3 interviews 2 interviews/district x 3 districts =6 interviews
Quantitative method		
Statistics of Project activities and results	Statistics by statistical form: Social and economic conditions Basic health indicators and Ability to provide access to primary health services Human resources and training of the Project; Ensure IT Infrastructure Monitoring, evaluation, communication Outcomes of the Project	1 form/province x 3 provinces
Self-fill form	Health workers directly participating in the project (Choose a sample: All health workers registered to participate in the Project are still working at the health facilities implementing the project)	
Collect and review available documents and data		
Reviewing and analyzing secondary documents	Project data, periodical reports Availability of documents, Reports of remote health care projects at other grassroots levels	

IV. RESULTS

1. Legal basis and the economic and social context and health conditions of the provinces/cities participating in the Project

1.1. Legal basis of the Project

On April 15, 2021, Chief Representative of UNDP Office in Vietnam sent a dispatch to the Ministry of Health to request cooperation in the application of remote consulting, medical examination and treatment using the software "Doctor for everyone" to improve the capacity of the grassroots level in 03 northern mountainous provinces, where the terrain is difficult to travel, the percentage of poor households and ethnic minorities.

On 31/5/2021 International Cooperation Department of the Ministry of Health issued dispatch number 493/QT to The Department of Information Technology announcing that the leadership of the Ministry directs the IT Department to act as the focal point to work with UNDP in support of the health sector in digital transformation.

On June 23, 2021, the Information Technology Department issued Official Dispatch number 375/CNTT-THKCB to UNDP proposing that UNDP assist in implementing the application of remote medical consultation, examination and treatment using the software "Doctor for everyone", including: perfecting the software "Doctor for everyone"; support to install 02 servers at the Data Center of the Information Technology Department, Ministry of Health to install and deploy the application of remote medical consultation, examination and treatment to improve the capacity of the grassroots medical level using the software "Doctors for everyone" in 03 provinces of Ha Giang, Bac Kan, Lang Son; training grassroots health workers in 03 provinces to deploy the application of remote medical consultation, examination and treatment; evaluate the effectiveness of software deployment in 03 provinces to have a basis to report to the leadership of the Ministry to expand the deployment nationwide.

On June 30, 2021, the UNDP office in Vietnam sent an official response to Official Dispatch No. 375/CNTT-THKCB agreeing with the support proposals of the Department of Information Technology.

1.2. The social - economic conditions of the provinces/cities participating in the Project

The areas selected by UNDP and the Ministry of Health to implement the project are three provinces, namely Lang Son, Ha Giang and Bac Kan. These are the provinces in the Northern mountainous region with special difficulties in all aspects: geographical conditions, traffic, education level, economy... Specifically, most of the population of the three provinces are residents. ethnic minorities (accounting for more than 80%). Results of ranking the rate of multidimensional poverty households in the period 2016-2020, Ha Giang ranked 2nd, Bac Kan 8th, Lang Son 11th. The rate of communes in zone 3 (the mountainous communes with special difficulties) is very high. The terrain of all 3 provinces is mainly mountainous, so traffic conditions are extremely unfavorable, especially in the rainy season. Such socio-economic conditions will greatly affect people's access to and use of health care services. Therefore, it is necessary to have intervention projects such as the "Doctor for everyone" project so that people can get better health care and ensure fairness in health care. This project has contributed to the implementation of the orientation "leaving no one behind" of the State and Government of Vietnam.

Table 3. Information on socio-economic conditions of the intervention provinces

Index	Lang Son	Ha Giang	Bac Kan
	(%)	(%)	(%)
Social conditions			
Ethnic minorities	81,8	87,7	87,9
Female	48,8	49,5	50,0
Children under 5 years old	7,2	11,7	5,7
Children under 15 years old	24,1	21,7	22,2
Economic conditions			
Poor households	12,2	22,3	17,0
Near-poor households	12,1	15,3	10,1
Commune 1	52,0	8,2	31,5
Commune 2	4,0	23,1	6,5
Commune 3	44,0	68,7	62,0

Source: Report according to statistical form of 03 provinces; National Statistics book 2020.

1.3. Health and healthcare conditions of the provinces/cities participating in the Project

Although the health sector has many solutions to increase access to and health services for the people, such as ensuring that almost all commune clinics have at least 1 doctor, 1 assistant doctor in obstetric or midwife and upgrade clinics to ensure national standards. However, the difficult socio-economic conditions have significantly affected the health indicators of people in the provinces. Many health indicators, especially maternal and child health, are still worse than the national ones. Specifically, the crude mortality rate, the infant mortality rate under 1 year old, the under-5 child mortality rate, the antenatal care check-up rate, the postpartum check-up rate are all higher than those of the whole country.

If people have timely access to health workers, emergency assistance and regular visits in the community, it can significantly improve health, reduce morbidity and limit mortality. This further proves the necessity of focused intervention projects for provinces with difficult conditions, in which priority is given to primary health care, improving capacity of grassroots healthcare level.

Table 4. Some indexes of health and healthcare conditions of provinces

Index	Nationwide	Lang Son	Ha Giang	Bac Kan
Health indicators				
Crude birth rate	16,3	15,2	19,7	14,7
Crude death rate	6,1	8,5	7,6	7,4
Child mortality rate < 1 year old	13,9	17,1	29,9	16,7
Child mortality rate < 5 years old	22,3	25,7	45,8	25,1
Percentage of malnourished children under 5 years old, weight-for-age	13,2	17,6	22,1	17,2
Percentage of children under 5 years old malnourished height for age	24,3	25,6	34,1	28,5
Percentage of children under 5 years of age who are malnourished and weight-for-height	6,1	7,3	6,5	7,2
Proportion of children <1 year of age who are fully immunized	94,8	97,6	94,1	96,0
Number of deaths due to obstetric complications	73	1	3	1
Percentage of women giving birth for antenatal care >= 3 times in 3 periods	90,7	77,8	69,9	92,7
Birth rate assisted by health workers	98,5	99,8	77,0	97,2
Percentage of mothers with postnatal check-ups	97,2	81,1	71,5	91,7
Medical Indicators				
Percentage of clinics with doctors	90,8	87,6	100	94,3
Percentage of clinics with assistant doctor in obstetrics or midwives	94,5	96,0	93,8	84,4
Percentage of clinics meeting the national criteria for commune health in the period 2011-2020	81,0	87,5 (175/200)	100 (193/193)	84,4 (103/122)

Sources: National Statistics Book 2020; National Health Statistics Book 2018; Report of Provincial Health Department 2021.

2. Implementation process and results of the Project

2.1. Project management, administration and communication

Issuing administrative documents: To implement the Project, all three provinces have developed a general plan of the whole province and issued official documents to guide lower-level units to implement the Project. Based on the general plan, 100% of the districts have also developed their own implementation plan.

Table 5. List of documents and activities of Project management

Index	Lang Son	Ha Giang	Bac Kan
Status survey before Project implementation	Only in pilot district	Only in pilot district	Only in pilot district
The plan to deploy the application "Doctor for every home" of the Provincial Department of Health	Already exists	Already exists	Already exists
The plan to deploy the "Doctor for everyone " application of the district health centers in the province	Already exists	Already exists	Already exists
Establishing a health advisory group	100% districts	100% districts	100% districts
Developing regulations on the operation of health advisory groups	Some districts are lacking	Some districts are lacking	Some districts are lacking
Develop a list of diseases that can be consulted, examined and treated remotely at the grassroots level	Already exists	Already exists	Already exists

Source: Project implementation summary report of the Provincial Health Department

Pre-survey, evaluation and monitoring of implementation: Before implementing the project, the Information Technology Department - Ministry of Health coordinated with UNDP to survey all three provinces. Then, due to the outbreak of the COVID-19 disease, the implementation of assessment and monitoring was limited. The province's health sector, the Department of Health, must focus forces on the frontline to cope with the complicated situation of the COVID-19 epidemic, so it is not possible to survey and evaluate all basic medical units before implementing and regularly monitoring project activities in the districts. In the coming time, when the epidemic has stabilized, the upper-level units need to have a plan to monitor all units with more frequency to support the lower-level to effectively implement the Project.

2.2. Building software and ensuring information technology infrastructure

2.2.1. Equipment and communication lines

UNDP has gifted 02 servers located at the Data Center, Information Technology Department - Ministry of Health to install and deploy the software "Doctor for everyone". The two servers are now public property of the Ministry of Health. The design load capacity of the server is 5,000 accounts. It is estimated that all health workers participating in the project of all 3 provinces are about 1,100 people, so the number of servers can completely meet the demand.

In the provinces, according to the Department of Health's report, all units at the provincial and district levels and 100% of commune health stations already have computers and Internet connection lines ie the most basic IT conditions to implement the Project have been met. But now, at the district health centers/hospitals, all of them have to use the conference hall as

> "Conducting briefings with the center and 20 commune health stations, because of the signal, some stations could not connect, so yesterday 11/20 stations were connected."
>
> *Group Discussion at Medical Center Cho Don, Bac Kan*

a consultation room. All units do not have their own consultation rooms and do not have consultation equipment in clinical and subclinical departments, so they cannot provide 24/7 professional support but only scheduled consultations.

In addition, many regional polyclinics and commune health stations are not equipped with equipment such as microphones, cameras, speakers/headphones to make video calls. The network connection to the commune is poor, often losing connection. Meanwhile, when supporting remote medical examination and treatment, especially supporting emergency cases, it is always necessary to ensure clear images and continuous connection. Therefore, to ensure the effectiveness of the Project, UNDP and management agencies at all levels need to have solutions to improve IT infrastructure, including IT equipment and transmission lines for both district and commune levels..

2.2.2. Design the software "Doctor for everyone"

Remote medical consultation, examination and treatment software "Doctor for everyone" is due to UNDP deployed FPT Information System Company Limited (FIS) designed in collaboration with the Information Technology Department - Ministry of Health implemented 100% free for both the grassroots health system and the people. The software has registered for software copyright at the Copyright Office - Ministry of Culture, Sports and Tourism and has received a copyright certificate. UNDP will conduct the donation to the Ministry of Health in accordance with current regulations to legalize it into a public property of the Ministry of Health. The software is designed for many target groups with different usage features (Table 6).

Table 6. Objects and features for users

Targeted users	Usage purpose
People	Book an appointment for medical examination and follow-up examination Ask and exchange health information with health workers via text message Receive messages for follow-up advice, prescriptions and medication usage, follow-up visits Receive health communication information, disease situation
Primary level health workers	Receive and schedule medical examination Follow-up messaging, medication advice, follow-up visits with patients Prescribe medicine online Call online for expert advice online Join online meeting rooms Receive news, notifications
Health workers of upper-level hospitals / health centers	Call online for professional advice View and comment on records and prescriptions of lower-level units Join online meeting rooms Receive news, notifications
Administration	Account management (medical facilities, users) Content management (news, articles, content) Management of forms and interfaces Store, extract information, data

Source: Summary report on building and deploying the software "Doctor for everyone"

When handed over and put into use, most of the features have met the needs of the users. However, the software still has some problems that are not suitable, difficult to use, and still have bugs that need to be fixed (Table 7).

Table 7. Errors or unsuitable features of the software "Doctor for everyone"

Problem group	Unresolved errors
Software running platform	Error using website browser and iOS platform. Requires software updates too often.
Account error	Unable to correct personal information. The only form of authentication is email (many health workers and people do not have email). Lack of detailed identification of upline doctors (specialty, phone number, current department) so that lower level can choose suitable support doctors. CHSs are not grouped into groups by district. There is no account for people to use. Lack of features associated with the phone to notify missed calls, messages in the absence of internet.
Meeting feature error	Cannot access further once the meeting has started There is no advance appointment feature, meeting time notification, so before the meeting, you have to call, text in other ways such as calling, texting, Zalo, ... No end meeting feature. Lack of feature to select groups to join the meeting.
Error of 24/24 service feature	Do not display missed calls, incoming calls. Short call waiting time. The system automatically logs out, so it does not guarantee the continuity during the service. CHSs can only connect with CHSs, not directly with doctors at provincial hospitals.
Error in storage and connection feature	There is no feature to store information about medical examination, prescriptions, and examination reminders The feature of counting the number of turns and the list of accounts, incoming calls, outgoing calls, meeting participants, ... has not been displayed. There is no connection with other medical software such as health insurance payment software, hospital management software, CHS management software, health management software, so the requirements for storage management are not guaranteed. medical expertise.

Source: Information from group discussion with 3 Provincial Health Department and 3 surveyed district health centers

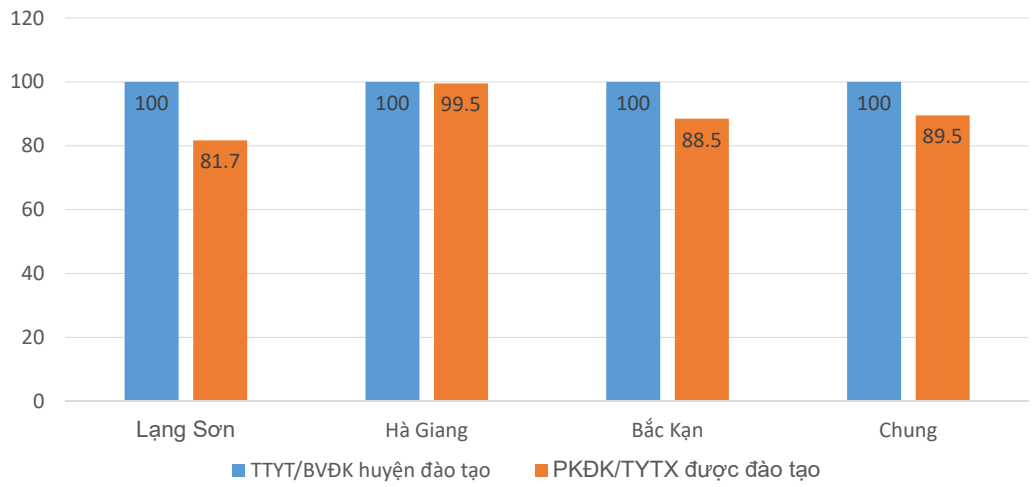
In addition, the technical support of the software design unit has not met the needs of the locality when deploying. Although the design unit has a specialized contact to contact when needing support, the response time is slow and untimely. Therefore, although phase 2 has been completed, but UNDP and Information Technology Department - Ministry of Health still need to continue working with FIS Company to complete the shortcomings and errors in software design. At the same time, it is also necessary to negotiate with the software design company to continue providing after-sales technical support services to 03 provinces after the second phase of the project ends.

2.2.3. Training to use the software "Doctor for everyone"

a. Coverage of training activities

The goal of the project at the end of phase 2 is that 100% of districts and communes across the three provinces will deploy training and use the software. According to reports from 3 provinces, by June 2022, the project has trained 100% of district health centers/hospitals and almost all (89.5%) of commune health centers/communes. Especially in Lang Son province, the number of untrained commune health stations is the most.

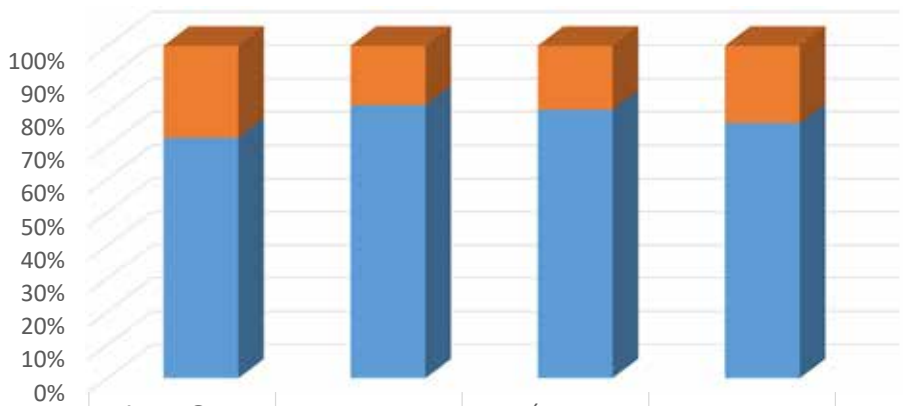
Figure 1. Percentage of units trained in the software "Doctor for everyone" compared to the number of units participating in the Project



Source: Statistical forms of 03 provinces

After the end of phase 2, out of 1,101 questionnaires, about 76.8% of health workers have been trained to use the software "Doctor for everyone". Most health workers are trained only once (74.5%). The percentage of health workers who are retrained for the second time is low (23.5%).

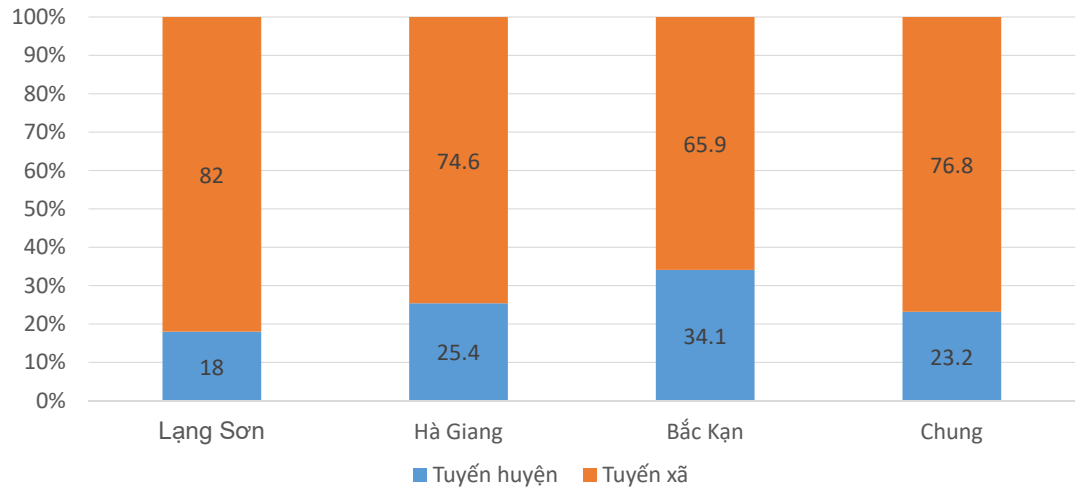
Figure 2. Percentage of health workers at the district and commune levels who have participated in training



	Lạng Sơn	Hà Giang	Bắc Kạn	Chung
Chưa đào tạo	27.6	17.8	19.2	23.2
Đã đào tạo	72.4	82.2	80.8	76.8

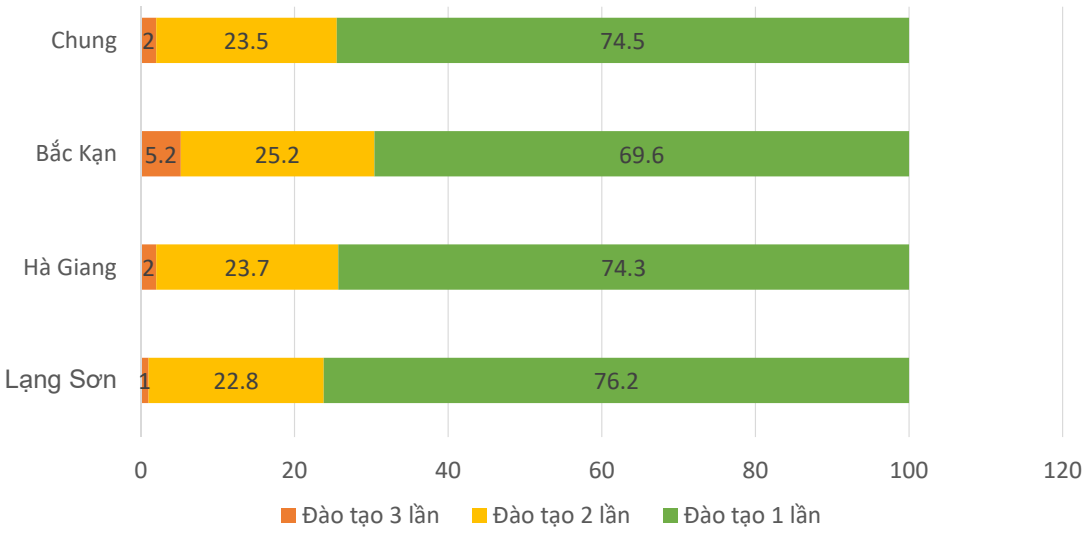
Source: Survey forms for health workers

Figure 3. Proportion of trained health workers by lines



Source: Survey forms for health workers

Figure 4. Percentage of health workers trained by number of training sessions



Source: Survey forms for health workers

Given the fact that the software still needs to be adjusted, and at the same time it still cannot guarantee the training coverage of 100% of commune health stations and all health workers, the Scheme and the locality still need to maintain training activities. In addition, training activities also need to be maintained regularly to ensure that 100% of health workers participating in telemedicine can use the software proficiently and are constantly updated with features and interfaces when the software is upgraded.

b. Objects, form and content of training courses

In order for health workers to use the software fluently, the project has implemented 18 training courses for 3 provinces (Table 8). Training duration is ½ day in the form of online training.

Table 8. Number of training courses using the software "Doctor for everyone" deployed

Index	Lang Son	Ha Giang	Bac Kan	Chung
Total number of training courses	7	6	5	18

Source: Report according to statistical forms of 03 provinces

The training subjects of the Project are mainly doctors, nurses and midwives, who directly provide medical examination and treatment services to people (Table 9).

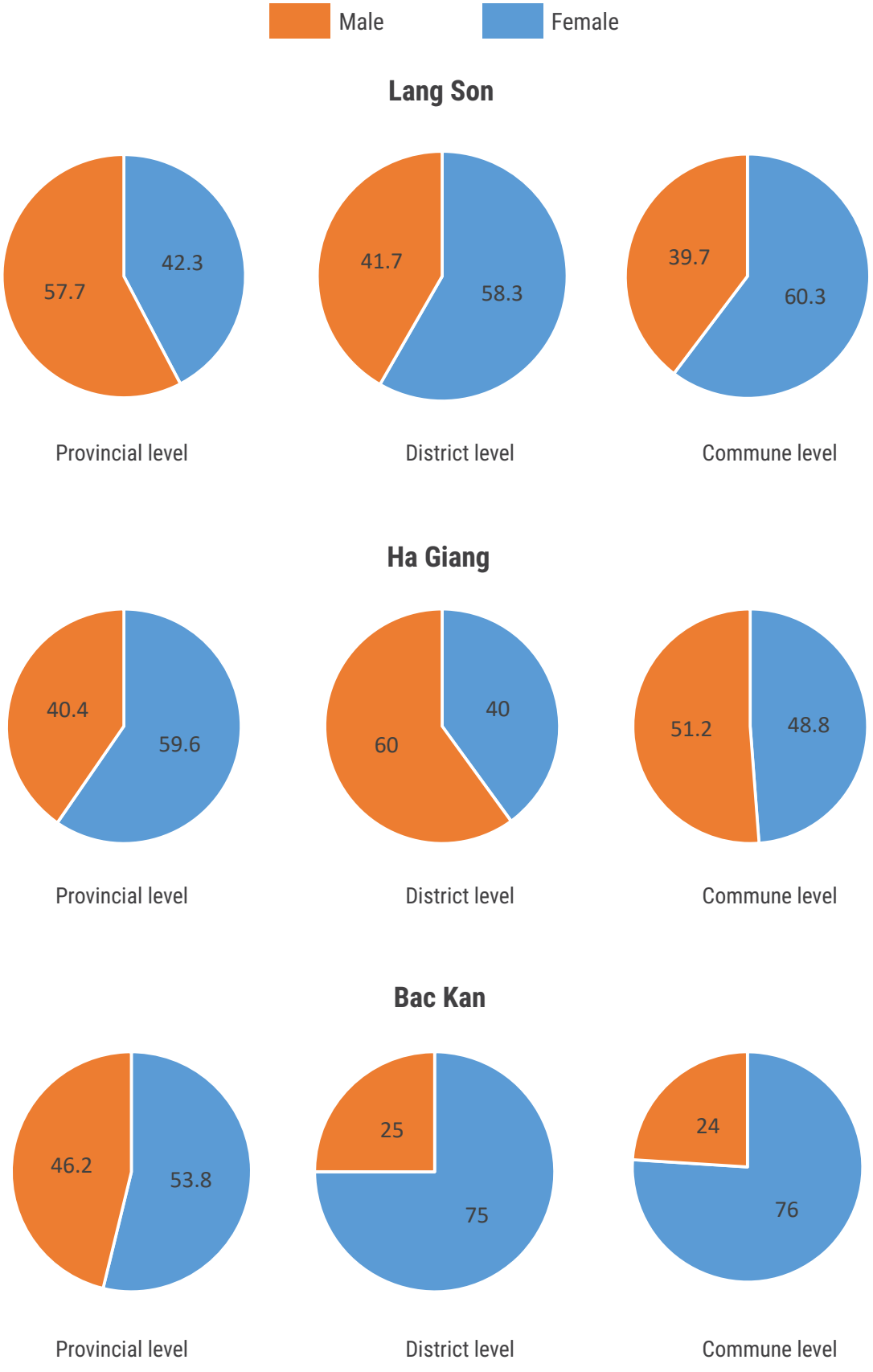
Table 9. Number and percentage of health workers trained in "Doctor for every home" software by professional title and line of work

Index	Lang Son		Ha Giang		Bac Kan	
	n	%	n	%	n	%
Provincial level: trained health workers	n=26		n=47		n=26	
Doctors	26	100	47	100	24	92,3
Nurses	0	0	0	0	0	0
Midwives	0	0	0	0	0	0
District level: trained health workers	n=230		n=195		n=76	
Doctors	138	60,0	119	61,0	27	35,5
Nurses	66	28,7	27	13,8	33	43,4
Midwives	26	11,3	18	9,2	4	5,3
Commune level: trained health workers	n=557		n=363		n=121	
Doctors	354	63,6	68	18,7	20	16,5
Nurses	177	31,8	83	22,9	27	22,3
Midwives	26	4,6	41	11,3	6	5,0

Source: Report according to statistical forms of 03 provinces

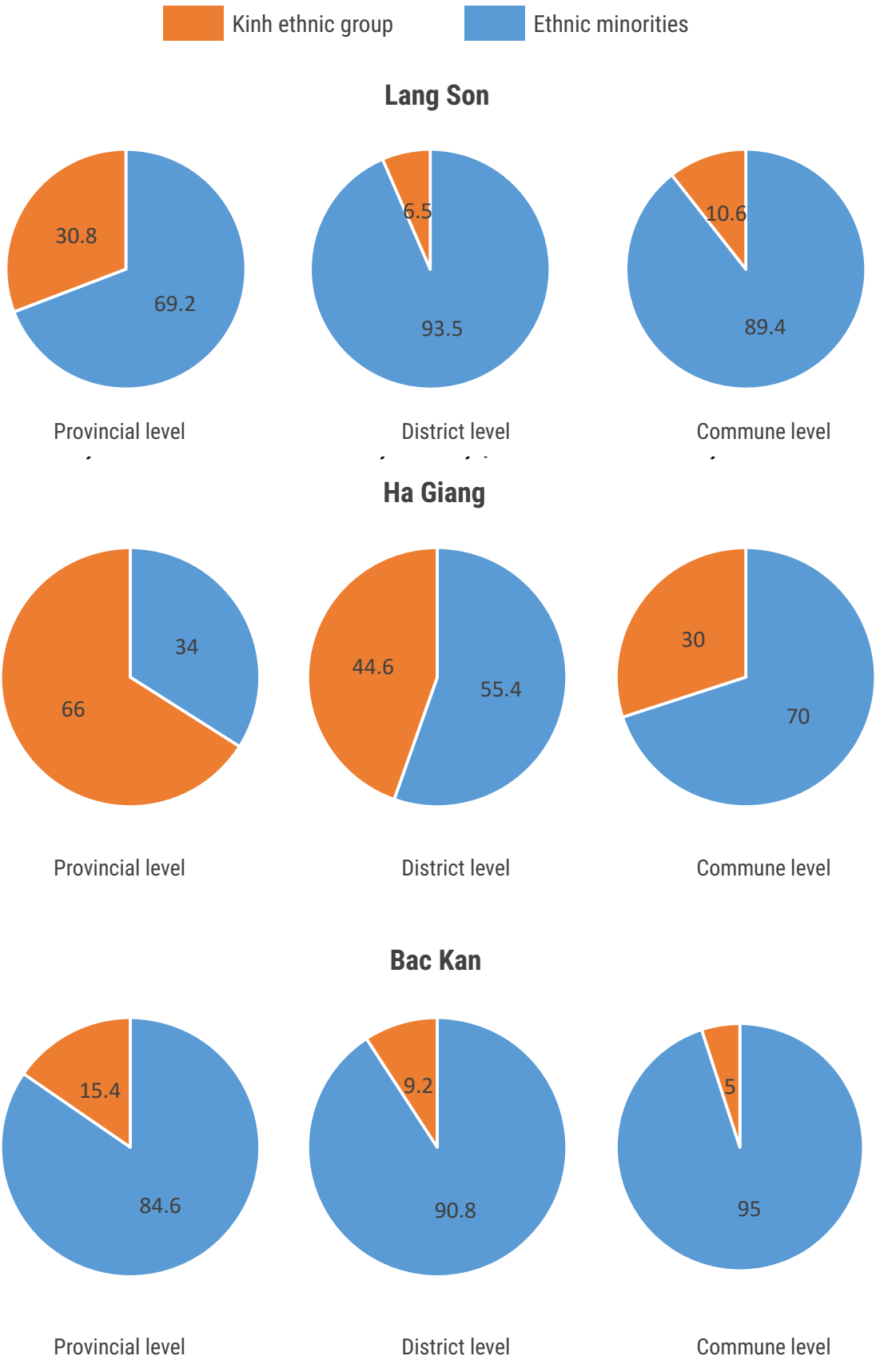
According to the reports of the provinces, all health workers with desired needs can participate in training regardless of gender, age, and ethnicity. The process of selecting training subjects has ensured gender equity as well as ensured access for ethnic minority health workers (Figures 5 and 6).

Figure 5. Proportion of male/female medical staff trained in the software "Doctor for all" compared to the workforce participating in the Project



Source: Report according to statistical form of 03 provinces

Figure 6. Percentage of health workers who are ethnic minorities trained in the software "Doctor for every home" compared to the workforce participating in the Project



Source: Report according to statistical form of 03 provinces

Evaluation of training content and methods, almost all students are satisfied, only about 2-6% are not satisfied with the quality of training. This shows that the design of the content and the way of training courses on using the Project's software are relatively suitable with the qualifications and needs of grassroots health workers (Table 10).

Table 10. Number and percentage of health workers who are not satisfied with the software training courses "Doctor for everyone"

Content	Lang Son		Ha Giang		Bac Kan		General	
District line	n=75	%	n=75	%	n=46	%	n=196	%
Training document	0	0	7	9,3	3	6,5	10	5,1
Theoretical training methods	0	0	5	6,7	0	0	5	2,6
Practical training methods	0	0	7	9,3	0	0	7	3,6
Instructor's skills	1	1,3	3	4,0	0	0	4	2,0
Support after training	0	0	9	12,0	1	2,2	10	5,1
Commune line	n=341	%	n=220	%	n=89	%	n=650	%
Training document	20	5,9	14	6,4	5	5,6	39	6,0
Theoretical training methods	22	6,5	8	3,6	6	6,7	36	5,5
Practical training methods	24	7,0	10	4,5	5	5,6	39	6,0
Instructor's skills	16	4,7	5	2,3	5	5,6	26	4,0
Support after training	19	5,6	9	4,1	5	5,6	33	5,1

Source: Survey forms for health workers

2.2.4. Using software for remote medical consultation and treatment

According to the Project report, the total number of app installs was 1,012. Compared with the number of trained health workers of 1,641 people, the application installation rate is about 61.7%. The remote health care activities currently being carried out by the provinces are mainly professional support between lines, there have been more than 2,000 calls on the system (Table 11).

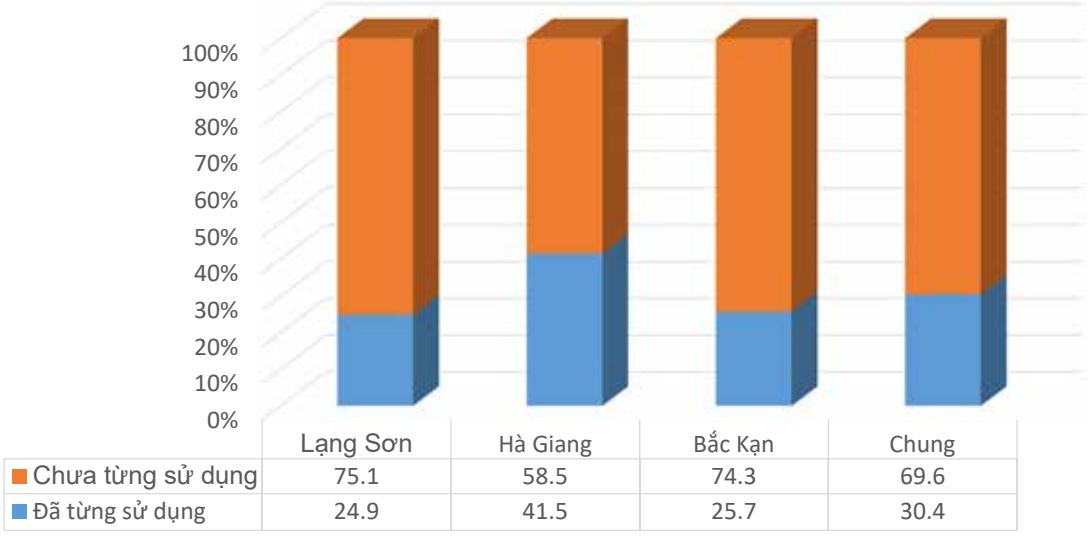
Table 11. Results of remote medical consultation and treatment implementation on the software "Doctor for everyone"

Index	Lang Son	Ha Giang	Bac Kan	General
Total number of mobile app installs	456	306	250	1.012
Total number of calls generated on the system	890	934	195	2.019
In which:				
Number of meetings/professional support between provincial and lower levels	-	226	11	-
Number of meetings/professional support between district and commune levels	6	231	96	-
Number of calls for professional support from the commune level	6	231	82	-
Number of calls between regional medical stations / polyclinics	2	246	6	-

Source: Report on project implementation results of 03 provinces

However, by the end of phase 2 of the project, the interview results show that the percentage of health workers who have used the software is still quite modest (30.4%) although the training coverage rate is quite high (76.8%).

Figure 7. Percentage of health workers who have used the software "Doctor for everyone"



	Lạng Sơn	Hà Giang	Bắc Kạn	Chung
Chưa từng sử dụng	75.1	58.5	74.3	69.6
Đã từng sử dụng	24.9	41.5	25.7	30.4

Source: Survey forms for health workers

There are two main groups of reasons that lead to health workers not using software, which is inadequate training to use the software proficiently and IT infrastructure not guaranteed (Table 12).

Table 12. Reasons why health workers have never used the software "Doctor for everyone"

Index	General	
	n=766	%
Not fully trained	233	30,4
Trained but don't know how to use yet	287	37,5
Software error, can't install apps, can't create an account	150	19,6
Lack of IT equipment and lines (no phone and internet)	114	14,9

Source: Survey forms for health workers

Among the health workers who have used the software, the most useful use is to seek professional advice from the upper level during the medical examination process (68.4%). The software has also supported 43.6% of health workers to have meetings or professional briefings. In addition, health workers also use the software to perform other professional tasks such as providing emergency assistance, reporting epidemics or informing patients' status before and during the referral process (Table 13).

Table 13. Contents of professional work health workers have used the software "Doctor for everyone" to perform

Index	Lang Son		Ha Giang		Bac Kan		General	
	n=143	%	n=149	%	n=43	%	n=335	%
Seek professional advice and advice between lines	89	62,2	113	75,8	27	62,8	229	68,4
Online briefing/meeting	85	59,4	45	30,2	16	37,2	146	43,6
Remote emergency support and advice	42	29,4	54	36,2	15	34,9	111	33,1
Unusual disease report	31	21,7	46	30,9	9	20,9	86	25,7
Inform the patient's condition before referral	32	22,4	31	20,8	10	23,3	73	21,8

Source: Survey forms for health workers

Until the end of phase 2, the project has not yet implemented the telemedicine function for people, so the results and effectiveness of this activity cannot be evaluated. To ensure the objectives of the Project, in the coming time, it is necessary to continue to implement remote medical care for people, perfect the software and continue training.

3. Social impact of the Project on the beneficiary areas

3.1. Impacts on health workers and health facilities at district and commune levels

3.1.1. Positive impact

According to the survey of health workers, the three most positive effects for health workers when participating in the Project are timely professional support at any time, not having to travel a lot to focus on their expertise and strengthening cohesion, exchange between local medical facilities. However, if the software is not convenient, simple, and does not interact with existing software, it will increase the already overload workload at the grassroots level.

Table 14. Benefits for health workers when using the remote medical examination and treatment application "Doctor for everyone"

Index	Lang Son		Ha Giang		Bac Kan		General	
	n=143	%	n=149	%	n=43	%	n=335	%
Get timely professional support at any time	105	73,4	114	76,5	31	72,1	250	74,6
Limit travel time for medical staff	100	69,9	89	59,7	27	62,8	216	64,5
Increase cohesion and exchange between upline and downline	85	59,4	87	58,4	27	62,8	199	59,4
Participate in meetings and exchange more expertise	89	62,2	61	40,9	20	46,5	170	50,7
Minimizing risks for health workers in the process of moving (especially in the rainy season, floods, storms, landslides, etc.)	76	53,1	69	46,3	22	51,2	167	49,9
Reduce costs (meeting logistics, travel, etc.)	76	53,1	62	41,6	26	60,5	164	49,0

Source: Survey forms for health workers

3.1.2. Difficulties and obstacles

Having to change people's behaviour from direct examination to telemedicine is the biggest obstacle for health workers. To solve this problem, the Project needs to consider adding a communication component for the people to the next phase's activities. In addition, the problem of IT background and payment regulations for remote medical services has also caused difficulties for health workers (Table 15).

Table 15. Difficulties of health workers when using the software "Doctor for everyone"

Index	Lang Son		Ha Giang		Bac Kan		General	
	n=143	%	n=149	%	n=43	%	n=335	%
People only trust direct medical examination and treatment	61	42,7	75	50,3	24	55,8	160	47,7
The quality of the application's information, images and updates is not stable	62	43,4	49	32,9	21	48,8	132	39,4
There is no regulation on payment of expenses, payment of health insurance coverage for remote medical examination and treatment	51	35,7	48	32,2	19	44,2	118	35,2
The health advisory group has not been established or operated for joint operation	40	28,0	40	26,8	12	27,9	92	27,5
There is no cost to pay airtime or network connection fees when using a personal phone	27	18,9	47	31,5	12	27,9	86	25,7
There is no process and regulation for remote medical examination and treatment consulting with the "Doctor for every home" application.	26	18,2	42	28,2	11	25,6	79	23,6
The application cannot record, store meeting content, consult	28	19,6	21	14,1	10	23,3	59	17,6
The list of diseases permitted for remote medical examination and treatment is not available or suitable	21	14,7	29	19,5	5	11,6	55	16,4
Increased workload and workload for medical staff	22	15,4	22	14,8	6	14,0	50	14,9
The application is designed inappropriately, inconvenient for users	19	13,3	23	15,4	11	25,6	53	15,8

Source: Survey forms for health workers

3.2. Impact on the local health network

3.2.1. Positive impact

According to the Department of Health, the project has also had many positive impacts on the local health system, including:

- Enhancing people's access to and quality of health care services;
- Strengthening professional capacity for grassroots health care;
- Strengthening the connection and sharing of information between medical facilities at the same level and between levels in the local health network;
- Convenient in guiding and streamlining patients at all levels to limit the overload as well as the waiting situation that causes frustration for people during the medical examination and treatment process.
- Contributing to administrative reform and modernization of health care service provision.

3.2.2. Difficulties and obstacles

For management, the system of legal documents is incomplete, such as the lack of regulations on health insurance payment, the list of techniques that can be performed remotely, and the lack of guidelines on specific professional regulations of the health sector. Remote medical care, lack of IT training standards for health service providers, ... are the biggest difficulties affecting the implementation process for the Project in particular and medical treatment activities in general.

> "There are no specific regulations on payment for remote medical treatment through the application. Medical facilities have to use too much software for professional work while human resources are very limited in quantity and quality."
>
> *In-depth interviews with leaders of the Department of Health*

In addition, due to the shortage of human resources at all medical facilities, it is not possible to arrange a 24/7 permanent resident to support the lower level regularly. Human resources at the management agencies are also lacking and part-time, so the frequency of supportive supervision has not been fully implemented in a timely manner. In addition, due to the lack of training, the IT qualifications of health workers in both management agencies and service providers are still limited, affecting the installation and use of software for medical examination and telemedicine.

3.3. Impact on people

3.3.1. Positive impact

According to people's opinion, the implementation of the software "Doctor for everyone" with the right features as designed will help people during the medical examination and treatment process, including: pre-consultation to know if it is necessary or not to go to a medical facility; make an appointment so you don't have to wait; receive medical support and advice during home treatment after medical examination. In addition, when the software

> "If you can install this application and spread it to the entire population, it will be very convenient for everyone. And many times when the questions are delicate, people really want to talk privately. Also, I want to see a doctor today, for example, the head doctor, I want to make an appointment with her first, if she is off this week, I know in advance so I can go next week. .... We can also choose who to examine us."
>
> *Group discussion of people in Cai Kinh, Huu Lung, Lang Son*

displays a list of doctors, people will be able to choose and schedule an appointment with the right person and at the right time..

The software also works for health education and disease prevention. Health care and disease prevention information, especially vaccination notices and disease prevention notices, will be sent to each citizen's personal account to help them access official information sources and timely.

The results of consultation with health workers showed that the three most positive impacts of the Project on people are: timely emergency support; reduced travel time to medical facilities and more frequent health monitoring (Table 15). Neither the people nor the health workers found the Project to have a negative impact on the health and life of the people.

Table 16. Benefits for people when the software "Doctor for everyone"

Index	Lang Son		Ha Giang		Bac Kan		Chung	
	n=143	%	n=149	%	n=43	%	n=335	%
Get timely emergency support	99	69,2	100	67,1	29	67,4	228	68,1
Reduce the time to go to the medical facility	96	67,1	92	61,7	27	62,8	215	64,2
Get regular health monitoring, more often	87	60,8	91	61,1	22	51,2	200	59,7
Reduce costs due to having to go to medical facilities	78	54,5	70	47,0	27	62,8	175	52,2
Monitor drug use at home	79	55,2	75	50,3	19	44,2	173	51,6
Monitored for abnormalities during home treatment	74	51,7	71	47,7	16	37,2	161	48,0
Minimize risks during travel (especially in the rainy season, flood, storm, landslide, etc.)	74	51,7	61	40,9	18	41,9	153	45,7

Source: Survey forms for health workers

3.3.2. Difficulties and obstacles

The biggest obstacle when using remote health care services is that people do not have enough connected devices such as computers and smartphones. In these three provinces, the percentage of poor households is still high, so they are not able to equip themselves with technological equipment. The second obstacle is the mountainous terrain, so the transmission line IT infrastructure is still very limited. The above-mentioned obstacles may be outside the project's ability to intervene, so the intervention of the local political and social system is required. However, for the difficulty caused by the software not being suitable with the intellectual level and language of the local people, the Project needs a solution to improve. For example, upgrade the software interface to be simple, easy to use or have instructions for use in words or in ethnic languages. In order to solve the above-mentioned shortcomings, people also have a program solution that can be accessed by household, because in a family with a group of young people, they will often have and use smartphones as well as access services. smartphone application; In addition, villages can also assign people who have smartphones or know the common language to assist those who do not have phones or cannot read.

Table 17. Difficulties of people when using software "Doctor for everyone"

Index	Lang Son		Ha Giang		Bac Kan		General	
	n=143	%	n=149	%	n=43	%	n=335	%
People do not have smart mobile devices	124	86,7	142	95,3	38	88,4	304	90,7
The telecommunications network has no coverage or is unstable	99	69,2	97	65,1	32	74,4	228	68,1
Difficult for people to use due to complicated application	93	65,0	75	50,3	33	76,7	201	60,0
People have difficulties in language, reading and understanding information because the application uses Vietnamese (Mandarin)	53	37,1	92	61,7	20	46,5	165	49,3

Source: Survey forms for health workers

V. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

1. After the end of phase 2, the goals and operational components of the Project have been implemented, including: (1) Building the software "Doctor for everyone" and setting up the technology infrastructure system. information; (2) Training to use the software; (3) Implement consultation, remote medical examination and treatment and professional briefing through software. Only the component of medical examination and treatment for people has not been implemented.

2. Despite being deployed during the outbreak of COVID-19 epidemic, with social distancing, the health sector of the provinces mainly focused on epidemic prevention activities, the activities of each component were completed on schedule. and nearly complete in volume (except for the component of medical examination and treatment for people that has not been implemented).

3. The project has ensured gender equality as well as ensured the access of ethnic minority health workers in all activities.

4. However, until the end of phase 2, there are still a number of activities that have not been fully completed that need to be further improved and maintained, namely:

- Regarding the management, administration and communication for the Project: there are still a number of districts that have not yet developed operating regulations of the health consulting group and the list of diseases that must be consulted and monitored after medical examination. The monitoring is not regular enough to promptly solve problems for the lower level. The propaganda activities have not been carried out for the people to know and participate.
- Regarding software construction activities and information technology infrastructure assurance: Although the software has been put into use, there are still some inappropriate points or errors. The IT infrastructure at the district and commune levels is still limited in terms of equipment and transmission lines, so it will be difficult to carry out activities that require clear images and sound and have a continuous connection such as providing medical examination and treatment support for people or remote emergency assistance.
- Regarding the training on software use: Not all communes and health workers are trained to use the software. Among those who do not use the software, up to 50% are not fully trained to use the software properly.
- Regarding the use of software for remote medical consultation, examination and treatment: Although the training rate is very high (76.8%), the percentage of health workers using it is still low (30.4%). The main reasons are not trained to use proficiently and lack of IT infrastructure (lack of equipment, poor transmission lines). The project has not yet implemented telemedicine for people.

5. The project has had many positive impacts on all stakeholders and no negative impacts on the local socio-economic. Specifically:

- Contributing to increasing the accessibility and improving the quality of health care services for the people.
- Improve professional capacity for grassroots health care. Strengthen the connection between medical levels, reduce overload for medical facilities at higher levels.
- Contributing to administrative reform and modernization of health care activities of the health sector.

Recommendations:

From the evaluation results of the first two phases of the project, the survey team proposed a number of points that need to be further implemented and improved in the coming time, including:

Enhance monitoring to support downline to effectively deploy the application.

UNDP and management agencies at all levels to look for investment sources and solutions to improve information technology infrastructure, contributing to improving the project's efficiency. Continue to adjust, repair and upgrade the "Doctor for every home" software. Form a technical support department in parallel with the professional support department at the district level to provide regular and timely support to both district and commune levels.

Continue to train and re-train health workers on how to use it every time the software is upgraded. Training activities need to ensure that all health workers are able to use the software proficiently when instructed.

Develop a plan to maintain training activities, periodic professional briefings and support medical examination and treatment, support on emergency duty of upper-level units for district and commune health facilities.

Develop a communication plan to prepare for remote medical examination and treatment for people.

Develop a plan and implement the telemedicine component for people through the software "Doctor for everyone"

Continue to replicate the model of remote medical consultation and treatment at grassroots levels on the software "Doctor for everyone" based on the experience of 3 localities that have implemented the project.

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