

TeleDoVIA Meeting the Challenge of Early Detection on Cervical Cancer: A Pilot Study in Indonesia

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Abstract: *Background:* Visual Inspection with Acetic Acid is a screening method for cervical cancer in Indonesia that is completed with photographs, or DoVIA. This photograph (DoVIA) can be discussed with the expert team in the media called TeleDoVIA. *Objective:* To assess the eligibility of TeleDoVIA as a medium for longdistance communication and medical consultation among medical practitioners who conduct VIA and oncology consultants. *Methods:* The sample was medical practitioners who sent cervical photographs to TeleDoVIA from between January 2019 and August 2019. Based on the inclusion and exclusion criteria, 96 medical practitioners with 191 cervical photographs were obtained. *Results:* The medical practitioners were distributed from the westernmost and easternmost parts of Indonesia (Banda Aceh and Fakfak). 70.8% of the medical practitioners were midwives, 92.7% work in Primary Health Care and were trained after 2016. Nearly all those involved (98.9%) were satisfied with the explanation given by the expert team on TeleDoVIA. Approximately 89% of documentations received were sharp pictures. The interpretation of VIA among medical practitioners compared to the expert team were similar, with an accuracy rate of up to 88.5%. *Conclusion:* TeleDoVIA can be considered as an effective communication and consultation medium to discuss the results of VIA.

1 INTRODUCTION

As a countermeasure against cervical cancer, Visual Inspection with Acetic Acid (VIA) is a proper screening method used for secondary prevention. The high sensitivity of VIA is believed to be able to show abnormalities of the cervix, including pre-cancer lesions that can be observed one minute after rubbing 3–5% acetic acid. However, as the name suggests, diagnosing the result of a VIA examination heavily relies lot on the visual interpretation of the medical practitioner. Therefore, to prevent misdiagnosis, the Ministry of Health established that the executor of VIA must go through initial training (Kementerian Kesehatan Republik Indonesia, 2017; Andrijono, 2018).

In the beginning, VIA did not yet have proper documentation that could be used as authentic proof and material for communication and consultation among medical practitioners. As a result, Oncology Gynaecology consultants at the Faculty of Medicine

at Universitas Indonesia–Cipto Mangunkusumo Hospital, along with other experts, agreed to document VIA results as pictures taken with a cellphone camera. This method was called Documentation of Visual Inspection with Acetic Acid (DoVIA) (Nuranna, 2019).

Over time, it was found that cervical photographs in DoVIA could serve as learning materials. Obstacles such as time and distance limited medical practitioners in remote areas from discussing VIA results with experts in the urban area. Thus, a portal was made as a consultation and discussion media open for all VIA practitioners.

The portal was named Telemedicine of DoVIA (TeleDoVIA Portal), a photography-based consultation model that exploited the telecommunication system through Whatsapp Messenger in smartphones, computers and computer tablets (Nuranna, 2019).

In medicine, the term ‘telemedicine’ was initially used on 1970. The word was composed of two terms: *tele*, which means ‘far’, and *medicine*, which means

‘to cure’; therefore, *telemedicine* literally means to cure the distance. Nowadays, this term has been widely used in medicine and pharmacy (Sood et al., 2007).

Based on a study conducted in Botswana that showed a significant concordance in the diagnosis of cervical lesions when comparing the diagnosis of the onsite clinician to the diagnosis of the clinician evaluating the photos through telemedicine (Quinley et al., 2011).

Meanwhile, since first introduced in 2017, many medical practitioners in Indonesia have used the TeleDoVIA portal as communication and consultation media, with varying pictures in DoVIA. However, it was not known how far the portal benefits the practitioners of VIA. Therefore, a study is needed to assess the benefits, understanding, satisfaction and effectiveness of the TeleDoVIA portal by medical practitioners as a communication and consultation media for results uploaded in DoVIA, and to discover the scope of the TeleDoVIA portal in Indonesia.

2 METHOD

This study uses the descriptive method. The unit of analysis was the medical practitioners who provided VIA and the documentation of VIA in the form of cervical photographs and consulted through TeleDoVIA. The result of the analysis was provided in the form of frequency distribution tables showing each variable: practitioners’ working area, age of medical practitioners, year of training, profession, type of healthcare facility, understanding and satisfaction of medical practitioners, reason for consultation, number of cervical photographs sent, accuracy of diagnosis, sharpness of cervical photographs and consultants’ response duration. The sample for this study was all medical practitioners who utilized TeleDoVIA from January to August 2019.

Based on the inclusion and exclusion criteria, information from 96 medical practitioners located all around Indonesia and 191 cervical photographs were obtained.

3 RESULTS

TeleDoVIA makes use of the Whatsapp Messenger feature in cell-phone, an application that is widely used by Indonesians. Internet connectivity is widely

available in Indonesia, thus optimizing consultation and discussion media to assist VIA practitioners.

The TeleDoVIA team consisted of Oncology–Gynaecology consultants and a few Obstetricians working at Cipto Mangunkusumo Hospital gathered in a Consultant Group using Whatsapp Messenger. Each consultant had their own schedule to provide a response to cervical photographs and questions asked by medical practitioners. TeleDoVIA was managed by an administrator. Through phone numbers spread on screening events, newly trained VIA practitioners could easily consult with experts. Every cervical photographs and question would be forwarded by the administrator to the Consultant Group and immediately answered by the scheduled consultant.

Table 1: Working Area of VIA Practitioners who Utilize TeleDoVIA.

Category	Frequency	Percentage (%)
Banda Aceh	1	1.0
Padang	1	1.0
Pekan baru	1	1.0
Batam	1	1.0
West Tanjung Jabung	1	1.0
East Belitung	1	1.0
Kalianda	1	1.0
Tangerang	1	1.0
West Jakarta	7	7.3
Central Jakarta	24	25.0
South Jakarta	9	9.4
East Jakarta	16	16.7
North Jakarta	8	8.3
Bekasi	7	7.3
Banjarnegara	1	1.0
Makassar	2	2.1
Mataram	1	1.0
Pontianak	1	1.0
Banjar Baru	1	1.0
Banjarmasin	1	1.0
Ambon	9	9.4
Fakfak	1	1.0
Total	96	100.0

Based on Table 1, medical practitioners benefitting from TeleDoVIA were located around Indonesia, spread from the west in Banda Aceh City (Aceh Province) to the east in Fakfak (West Papua Province). Most medical practitioners using TeleDoVIA worked in Central Jakarta (25%).

Indonesia is an archipelago state consisting of 18,210 islands over an area of 7 million km². The complex physiographic condition causes each territory to have different accessibility that is restricted by time and distance. Medical practitioners

working in remote areas had limited access and ability to directly discuss cases with experts (Bintarto and Hadisumarno, 1979).

Currently, TeleDoVIA has been utilized by medical practitioners from Banda Aceh City (Aceh Province) on the west to the east at Fakfak (West Papua Province). With the development of 905 'Desa Dering', internet access is available in even the most remote areas (Masa, 2017).

Whatsapp Messenger enabled TeleDoVIA to display original cervical photographs. TeleDoVIA also helped to assist newly trained medical practitioners. With TeleDoVIA, the discussion could be conducted without time and distance restrictions; thus, consultants did not need to come to practitioners working area. Through the TeleDoVIA portal, medical practitioners could easily send DoVIA and questions through Whatsapp Messenger to discuss cases with consultants. All telecommunication devices used were commonly used devices in telemedicine (Masa, 2017).

Table 2 shows that the majority of medical practitioners who were more than 40 years of age trained after 2016. Almost all practitioners were satisfied with TeleDoVIA consultations and understood the explanations given by the consultants (98.9%). Seventy-five percent of medical practitioners consulted fewer than three times in eight months. The majority of medical practitioners (76%) consulted through TeleDoVIA because they wanted to confirm VIA interpretation.

Information and photography technology used in DoVIA and TeleDoVIA was easily implemented by all medical practitioners, regardless of age and profession. This was proven by the high percentage of midwives utilizing TeleDoVIA (70.8%). Additionally, medical practitioners who were more than 40 years of age could also upgrade their knowledge and insight through communication and discussion with consultants through the TeleDoVIA portal (Jamil, Khairan and Fuad, 2015).

Based on this study, it was found that almost all medical practitioners utilizing TeleDoVIA were newly trained practitioners who wanted to confirm their diagnosis. As newly trained practitioners, they were sometimes doubtful about their interpretation of VIA results. It should be noted that the VIA examination is subjective; thus, the experience had a great deal to do with increasing the accuracy of VIA interpretation. Guidance and assistance were needed, for example, through the TeleDoVIA portal. TeleDoVIA could act as long-ranged assistance for medical practitioners by consultants (Bigoni et al., 2014).

VIA screening method training for medical practitioners obliged newly trained practitioners to screen a minimum of 50 patients to be reported to the trainers afterwards, as noted in the logbook as a condition to be able to participate in Objective Structured Clinical Examination (OSCE) as evaluation model, albeit it in an informal manner. This was intended to increase the familiarity of the practitioners towards varying cervical appearances in VIA.

However, the evaluation model by means of OSCE was limited by time and financing. Through this study, it was concluded that TeleDoVIA could be an alternative as assistance by newly trained practitioners and a refreshing course for senior practitioners. Most practitioners (98.9%) were satisfied with the TeleDoVIA portal. The same percentage of practitioners claimed that they fully understood the explanation given by the consultants.

Table 2: Characteristics of VIA Practitioners.

Category	Frequency	Percentage (%)
Age		
≤ 30 years old	25	26
31 - 40 years old	40	41.7
41 - 50 years old	21	21.9
> 50 years old	10	10.4
Year of Training		
< 2017	18	18.8
≥ 2017	78	81.3
Profession		
Midwife	68	70.8
Doctor	28	29.2
Type of Healthcare Facilities		
Private Clinics	7	7.3
Community Health Centre	89	92.7
Understanding		
Understood	95	98.9
Not Understood	1	1.1
Satisfaction		
Satisfied	95	98.9
Not Satisfied	1	1.0
Reason for Consultation		
Case Discussion	23	24.0
Confirmation of Diagnosis	73	76.0
Number of Photographs Sent		
< 3 Photographs	72	75.0
3 - 5 Photographs	20	20.8
> 5 Photographs	4	4.2
Total	96	100.0

Table 3: VIA Results Documentations.

Category	Frequency	Percentage (%)
Diagnosis		
Correct	169	88.5
Incorrect	22	11.5
Sharpness of Photographs		
Sharp	170	89.0
Not sharp	21	11.0
Duration of Consultant Response		
1 - 6 hours	106	55.5
7 - 12 hours	14	7.3
13 - 18 hours	17	8.9
19 - 24 hours	54	28.3
Total	191	100.0

Out of 191 documentations obtained in TeleDoVIA, the majority of the cervical photographs were sharp and clear (89%). The interpretation made by the practitioners and consultants showed an accuracy of up to 88.5%. Photographs and questions were mostly answered in less than six hours' time (55.5%).

The response time for DoVIA sent by the practitioners ranged from one minute to 24 hours. Therefore, TeleDoVIA was deemed effective as a medium for communication and consultation of medical practitioners in secluded areas. This also solved the discrepancy of the distance between practitioners (Hardati, P., 2016).

Some studies show that DoVIA has become an important method to control the quality of an examination. Therefore, standardization for photography procedures using smartphones is needed, including but not limited to shooting angle, distance from the cervix and the number of pictures taken. In this case, DoVIA has specific photography techniques. This material had been a part of VIA screening method training, which requires that every practitioner must be able to take DoVIA photographs with their own cellphones. This showed in the results of DoVIA sent in the portal, with 89% out of all pictures being categorized as appropriately sharp photographs. Therefore precancer lesions or white plaque could be clearly seen (Bray et al., 2018).

Quality of DoVIA was an important part of diagnosis and reference for consultants. This was in line with previous studies that stated that photographs of the cervix were crucial for accurate cervical lesion diagnosis. This was supported by an expert opinion that stated that quality assurance for VIA was important and documentation of VIA results could be

an important supporting procedure. (Goldie et al., 2005; Quinley et al., 2011).

4 CONCLUSIONS

This study proved the benefits of TeleDoVIA, which was in line with the function of telemedicine according to the World Health Organization. The TeleDoVIA portal was effective as a consultation and discussion medium for medical practitioners, especially those who work in rural areas and are unable to directly consult with a Gynaecology–Oncology expert. The TeleDoVIA portal also acted as a form of assistance for newly trained medical practitioners when doing VIA.

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