General practitioners translating ultrasonography into clinical practice in rural Nepal: rewarding practices and challenges

Binod Dangal[1], Rajesh Poudel[2], Pradita Shrestha[2]
[1]MDGP Consultant, Pashupati Chaulagain Memorial Hospital, Charikot, Dolakha, Nepal; [2]MDGP, Bir Hospital, National Academy of Medical Sciences, Kathmandu, Nepal

ABSTRACT

Ultrasound has been increasingly implemented in general practice for its diagnostic and therapeutic purposes. The recent introduction of Point of Care Ultrasound (POCUS) has changed the intended management plans reducing referrals and morbidity and mortality. Inadequate numbers and less availability of radiologists in peripheral setting is a major challenge for coverage of ultrasonography services in remote Nepal. MD General Practitioner (MDGPs) in district hospitals have performed and interpreted large variety of cases for better clinical outcome. Regular communication, coordination and collaboration meeting between MDGPs and radiologists, specific updates and training programs are needed for MDGPs to further strengthen their skills.

Keywords: MD general practitioners (MDGPs), point of care ultrasound (POCUS), radiologist, ultrasound

CORRESPONDENCE
Dr. Binod Dangal
MDGP Consultant, Pashupati Chaulagain Memorial Hospital, Charikot, Dolakha, Nepal
Email: binod.dangal999@gmail.com

INTRODUCTION

Historically, ultrasonography (USG) has been the only part of radiologists, but in recent days the method has been increasingly used by non-radiologists.[1] Ultrasound has been increasingly implemented in general practice for its diagnostic and therapeutic purposes.

The recent introduction of Point of Care Ultrasound (POCUS) has changed the intended management plans reducing referrals and morbidity and mortality.[2] The use of POCUS in general practice has shown more accuracy in diagnosis,[3] supported in better physical examination findings, subsequent change in patient treatment and more rational use of healthcare resources.[4]

MD General Practitioner (MDGP) residency is a three-year structured program in Nepal and the training includes internal medicine, general surgery, obstetrics and gynecology, pediatrics, anesthesia, emergency medicine, psychiatry and 1-3 months of radiology training. They are trained to focus on basics of obstetric care, abdominal scanning and soft tissue examination.

Nepal has only 150 radiologists (1 per 185,000 population), who are largely concentrated around the capital city.[5] Inadequate numbers and less availability of radiologists in peripheral setting is a major challenge for coverage of ultrasonography services in remote Nepal. However, MDGPs in district hospitals have performed and interpreted large variety of cases for better clinical outcome.

This study describes the experience of MDGPs in translating ultrasonography services at Pashupati Chaulagain Memorial Hospital (PCMH), previously Charikot Hospital for better diagnostic accuracy, therapeutic planning and training mid-level practitioners for better clinical outcome.

Rewarding Practices:

MDGPs performing USG scans at PCMH:

MDGPs have performed 3424 ultrasound scans over 1-year period from January 2021 to December 2021. Almost half of the overall scanning were obstetric scans followed by abdominal which comprised of 28%, soft tissues (13%), cardiac (9%), vascular (1.5%) and pulmonary (0.5%) shown in figure 1.

Training mid-level practitioners, primary care physician and MDGP residents:

MDGPs working at PCMH train mid-level practitioners, primary care physicians and MDGP residents on regular basis with WHO established standards in the use of diagnostic ultrasound. The training lasts for 2 to 6 weeks depending on the case exposure and supervision. The structure of the training is the guidance by MDGPs with theoretical class on diagnostic ultrasound and hands on practices. One of the study done in the same hospital shows that MDGPs led task shifting activities in ultrasonography for health care workers.[6]

POCUS applications in diagnosis and therapeutic purposes:

POCUS in general practice is particularly useful in emergency situations. A well performed POCUS examination may detect ectopic pregnancy and guide for immediate lifesaving interventions.[7] This has been very useful in detecting hemoperitonum during trauma, hemo-pneumothorax, pericardial effusion, intra-abdominal abscess, solid-cystic masses and organomegaly. The therapeutic purposes are for drainage of abscess from internal organs, pleural tapping for localized effusion, foreign body removal and fluid challenge in cases of heart failure. More importantly, POCUS is being is widely used for regional anesthesia for upper limbs fracture surgery. The example of use of POCUS by MDGP at PCMH has supported in diagnosing and managing complicated obstetric, gynecological and general surgical cases.

Challenges and Way Forward:

In doubtful situations, there are no one to support MDGPs for better interpretation of the images. Updating of equipment, quality control of images, updated protocols and updated training are lacking for MDGPs. There is less official collaboration and coordination between radiologists and MDGPs.

From curriculum of MDGP course perspective, a structured curriculum based training package should be organized and proper guidance should be given with adequate hands on practice. There has to be frequent communication, coordination and collaboration meeting between radiologists and MDGPs. Nepal government should open specific training program platform for MDGPs, MBBS and mid-level practitioners. There are few successful examples of training programs on ultrasound for nurses to reduce maternal mortality in Uganda,[8] integrated bedside ultrasound training for emergency physicians,[9] establishing ultrasonography training program during residency programs.[10]

Table 1. Different types of scans with focus areas.

SN	USG scan	Focus areas
1	Obstetric	Pregnancy and its complications, maternal scan to see ovaries, uterus and kidneys.
2	Abdominal	Pathology of liver, kidney, spleen, pancreas, pelvic cavity, gall bladder, urinary bladder, adnexa, uterus.
3	Soft tissues	Pathology of thyroid gland, scrotum and testes, appendix, musculoskeletal, superficial mass and abscess.
4	Cardiac	Chambers, ejection fraction, pericardial effusion, septal defects, wall thickness, valvular problems.
5	Vascular	Vessels, DVT
6	Pulmonary	Pneumothorax, hemothorax, pleural effusion.

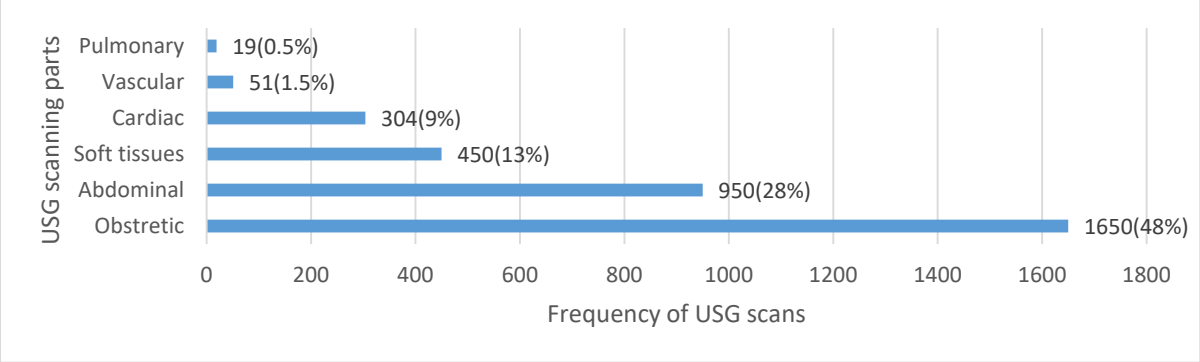

Figure 1. Graph showing number of USG scans done by MDGPs in PCMH over 1-year period.

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