

## Job Scope Analysis Among Prosthetics and Orthotics Practitioners in Malaysia

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### Abstract

According to WHO and ISPO guidelines, three categories of personnel are involved in prosthesis and orthosis fabrication: prosthetists/orthotists; associate prosthetists and orthotists and prosthetics and orthotics technicians. It is important that they are competent and adequately trained. This is due to their responsibility in providing exemplary prosthetic and orthotics services to help users achieve mobility and elevate quality of life. To obtain information about the tasks performed on a job and the knowledge, skills, or abilities to perform those tasks, a practice analysis study is conducted. In this study, P&O companies in Klang Valley were invited to complete a survey to obtain information on professional background, domains, tasks, knowledge, skills etc. The survey questionnaires are adopted from the American Board for Certification in Orthotics, Prosthetics & Pedorthics, Inc. A total of 14 companies with 51 correspondents returned the survey. At the moment, the male practitioners dominate in P&O services (62%), most of the practitioners are between 25-34 years old, and mostly have <10 years of experience. In terms of patient distributions, adults are the highest (60%) followed by geriatric (20%) and pediatric (20%). The top three practice areas in orthotics are lower extremity (50%), spinal (21%) and upper extremity (15%), while for prosthetics are transtibial (30%), transfemoral (16%) and partial foot (11%). The top primary work performed are prosthetic and orthotic fabrication; clinical prosthetic and orthotic patient care; and education. Practitioners spent most of their time in these top three domains: patient assessment, formulation of the treatment plan and implementation of the treatment plan. These elementary findings of this study are useful for higher education and training providers in planning proper clinical and technical programmes for future and existing practitioners, also as support evidence for the policy maker in ensuring high quality provision of P&O services.

**Keywords:** practice analysis, prosthetic, orthotic, job scope

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## Introduction

Generally, personnel involved in prosthetics and orthotics (P&O) services are categorized into two broad job profiles: clinicians (prosthetists and/or orthotists and associates) and non-clinicians (technicians and support staff). They provide prosthetics and orthotics treatment for people with physical impairments or functional limitations, along with other healthcare practitioners. Although there has been expansion and development of prosthetics and orthotics training programs during the past three decades, there are significant shortages of prosthetics and orthotics personnel worldwide (WHO, 2017; Spaulding et al., 2023).

In Malaysia today, an estimate of 170,000 are in need of prosthetic or orthotic devices and will be increased to 200,000 individuals in 2040 (Institute for Public Health, 2015, Arifin et al., 2017). Additionally, recent national survey reported a prevalence of overall disability at 11.1% among adults aged  $\geq 18$  years (Institute for Public Health, 2019). To provide high-quality P&O services, competent and adequately trained P&O personnel must be made available (Forghany et al., 2018; Cochrane et al., 2019). This can be achieved by establishing and advocating for the highest patient care standards in the provision of safe and effective P&O services through proper certification and education programs.

Therefore, a practice analysis study is crucial to update the profile of the profession and certification exam material as necessary, as well as providing information to members of the profession, researchers, regulators, and education programs (ABC, 2022). A well-designed practice analysis study should include the participation of a representative group of subject matter experts who reflect the diversity within the profession (ABC, 2022). In a practice analysis study, an appropriate sample of professionals is asked to describe what they do in their practices and their feedback is considered an essential part of the content-related validity evidence for licensure and

certification tests (Kane et al., 1995; Knapp & Knapp, 1995; Soto, 2011;). The objective of this study is to describe the contemporary practice of P&O personnel in Malaysia particularly (i) the demographic and professional characteristics of practitioners and (ii) identify main tasks, knowledge and skills acquired by practitioners.

## Methods

The questionnaires used in this study was adopted from the American Board for Certification in Orthotics, Prosthetics & Pedorthics (ABC) which only focused on two sections which are: (1) Professional Background, Work Setting and Demographic Information, and (2) Domains and Tasks. Domains are global areas of responsibility performed by credentialed professionals (6 domains). Tasks are the activities performed within the domain of practice (66 tasks).

Participants were recruited using purposive sampling because it only focused on the technical personnel of the P&O industry in Malaysia. Moreover, the authors have decided on what needs to be known and identified people who are willing to provide the information based on their knowledge and experience. A total of 30 P&O companies were approached and consent was obtained from each personnel who was willing to participate. Participants were briefed about the study, and they answered the printed questionnaires at their own pace. One of the authors collected and anonymously labeled all the questionnaires. Descriptive analysis was used to describe the collected data.

## Results

A total of 14 companies with 51 correspondents (21 clinicians and 30 non-clinicians) returned the survey. At the moment, the male practitioners dominate in P&O services (62%), most of the practitioners are between 25-34 years old, and mostly have <10 years of experience. In terms of patient distributions, adults are the highest (60%) followed by geriatric (20%) and pediatric (20%). More details can be referred to in Table 1.

**Table 1.** Professional Background, Work Setting and Demographic Information

<u>Demographic</u>	<u>Percent (%)</u>	<u>Percent (%)</u>
Gender	Male: 62	Female: 38
Education level	PhD	2
	Master	5
	Degree	25
	Diploma	2
	Certificate	29
	Others	9
	No response	28
Age (years old)	<25	11
	25-34	37
	35-44	25
	45-54	16
	55-64	9
	>65	2
Years of Experience	<10	53
	11-20	16
	21-30	7
	>31	9
	No answer	15
Patients in each age range	Pediatric	20
	Adult	60
	Geriatric	20

The top primary work performed among the P&O personnel are prosthetic and orthotic fabrication (38%); clinical prosthetic and orthotic patient care (24%); and education (12%).

Both clinical and non-clinical staff spent most of their time in these top three domains: patient assessment, formulation of the treatment plan and implementation of the treatment plan (Table 2).

**Table 2.** Average percentage of work time based on domains between clinicians and non-clinicians.

<i>Domains</i>	<i>(%) Clinicians</i>	<i>(%) Non-clin.</i>
1. Patient Assessment	28	16
2. Formulation of the Treatment Plan	19	13
3. Implementation of the Treatment Plan	20	38
4. Follow-up to the Treatment Plan	14	8
5. Practice Management	9	13
6. Promotion of Competency and Enhancement of Professional	10	12

The highest frequency (1=Never, 2=Rarely, 3=Occasionally, 4=Frequently, 5=Routinely) in tasks for each domain are summarized in Table 3.

**Table 3.** Highest frequency task for each domain

<i>Dom</i>	<i>Task</i>	<i>Freq</i>
1	Take comprehensive patient history	3.59
2	Communicate with the patient and/or caregiver about the recommended treatment plan	3.73
3	Fabricate and/or assemble orthosis/prosthesis for initial or diagnostic fitting and/or delivery	4.15
4	Assess function of orthosis/prosthesis relative to treatment goals	3.61
5	Adhere to policies and procedures in compliance with applicable professional and ethical guidelines	3.92
6	Participate/provide continuing education for orthotists, prosthetists and other health-care providers	2.88

The top three practice areas in orthotics are lower extremity (50%), spinal (21%) and upper extremity (15%) (Figure 1), while for prosthetics are transtibial (30%), transfemoral (16%) and partial foot (11%) (Figure 2).

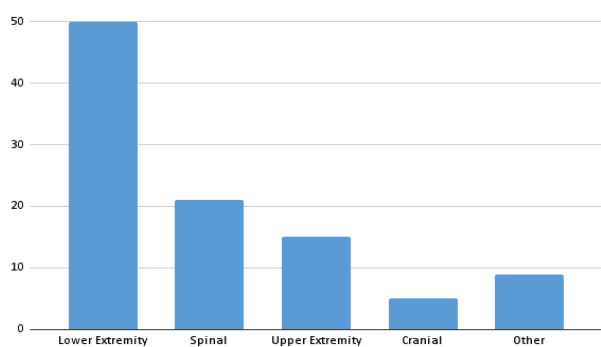


Figure 1. Percentage of time spend in orthotic practice areas

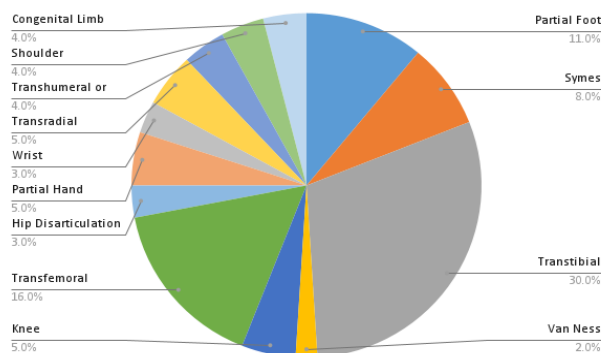


Figure 2. Percentage of time in prosthetic practice areas

## Discussion

This survey provided an analysis of practice among the P&O personnel in Malaysia which includes professional background, work setting and demographic information, as well as domains and tasks. Comparisons with other countries are limited because practice analysis was conducted in the USA for the P & O industry and hand therapist (ABC, 2022; Keller et al., 2021).

Similar to the US, male practitioners dominated the P&O field. In contrast, there are notable differences between these two countries such as: the percentage of degree holders between the US (70%) and Malaysia (25%), almost all US practitioners (92%) are mature adults (age 35-64) compared to 50% in Malaysia and most US practitioners have >10 years' experience, while <10 years' experience for Malaysians. It is also very interesting to notice that patients' age category receiving P&O services are somehow more balanced in the US (paed=24, adult=44, ger=32). These huge

differences are obviously due to US developed P&O education and system compared to Malaysia which is still at infancy stage.

Regarding domains, the three highest domains with the most time spent are the same for both countries, which are patient assessment, treatment plan formulation and treatment plan implementation. Specifically in Malaysia, the clinicians spent most of the time in patient assessment while non-clinicians in fabrication (implementation). This scenario is in line with WHO recommendations in delineating roles between the two job categories. As for the tasks, the highest tasks within each domain are the same between the countries except for tasks in Domain 3 where 'Select appropriate technique, perform measurement/shape capture' activities ranked highest for the US.

Similarities can also be found in the top three practice areas in orthotics (which are lower limb, spinal and upper limb) and prosthetics (transtibial, prosthetics, partial foot). Although the two countries originated from Asia and North America continents, the results show that the occurrence of deformities are comparable across the globe. A recent study has proposed a conceptual framework for enhancing clinical reasoning skills within P&O education themes and variables identified are International Classification of Functioning, Disability and Health, technical variables and professional services which encompasses elements in ABC's practice analysis approach (Spaulding et al., 2019). These collaborative efforts are the manifestation that P&O professionals will need to continue to stay up to date with new technologies and techniques in order to maintain their skills and understanding in daily practice (Spaulding et al., 2020).

## Conclusion and Recommendation

This study provides descriptive details about the practice analysis of P&O practitioners in Malaysia. Overall, the daily practices of the practitioners adhere to the suggested knowledge and skills required by the ISPO and WHO. The findings suggest the data shown in this study may

serve as a basis for the content validity of developing certification examination content and for assessing the validity of licensure examinations.

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