

Physical Disabilities in Papua New Guinea: How can professional physiotherapy training fit best?

Froukje Pronk and Patricia Thornton

Abstract

The Physiotherapy Department of the Divine Word University in Madang was established in 2003 and is the first in Papua New Guinea to offer a professional physiotherapy qualification program. A research project has been carried out to improve the appropriateness of the program to the rehabilitation needs of people with physical disabilities in Papua New Guinea. This paper aims to give insights from a profile of persons experiencing difficulties with moving in a rural and an urban area of Eastern Highlands Province, Papua New Guinea. Quantitative data were gathered about limitations in activities and restrictions in participation experienced by the target group. Qualitative data were gathered about use of physiotherapeutic and allied health care, experiences of such care and the barriers to accessing it, as well as in-depth data to better understand traditional beliefs about the causes of physical difficulties and their traditional treatment. An increase of awareness on different levels, both on the receiving and the delivering side of physiotherapeutic and allied health care, seems to be a key issue to improve services for people with disabilities in Papua New Guinea. Implications for the training of physiotherapists and the needs for development of the profession in Papua New Guinea will be discussed.

Key words: disability, physiotherapy, traditional treatments and remedies, health care

Introduction

The first nationally trained physiotherapists of Papua New Guinea (PNG) graduated in February 2006. The Physiotherapy Diploma program of the Divine Word University (DWU), introduced in 2003 and the only program in PNG had completed its first cycle. The Physiotherapy Department of DWU designed a study with the intent to inform a review of the curriculum, so that it might be tailored appropriately to meet the rehabilitation needs of people with physical difficulties in PNG. As in most developing countries, there is very little documentation about the area of disability in PNG. For this reason, the Department of Physiotherapy lacked information to review and evaluate the contents of the program, especially concerning its appropriateness to the rehabilitation needs of people with a disability in PNG.

The department aimed to generate information that will better equip diploma physiotherapists with the skills they need in practice, both in urban and rural settings.

The research project by the Physiotherapy Department of DWU, reported here, answered the following two questions:

- Q. 1 To what extent will the diploma physiotherapists be suitably prepared to provide physiotherapeutic care to people with disabilities in PNG?
- Q. 2 How do cultural aspects and traditional illness beliefs influence the entire process of physiotherapeutic and allied health care?

The Physiotherapy Department of DWU and the Disability Research Project¹ collaborated to carry out a small-scale exploratory study among people with physical difficulties to answer these two questions. This paper aims to communicate the findings this study has produced.

Both quantitative and qualitative data were collected in this study. The Department collected quantitative data from persons living in an urban and rural area of the PNG Highlands on the three different levels of health as described in the International Classification of Functioning Disability and Health (World Health Organization, 2001):

- regions and parts of the body where people experience pain or loss of function;
- limitations in activities and pain associated with those activities;
- and restrictions in participation in life situations.

Qualitative data were gathered about how and why people access physiotherapeutic and allied health care, experiences of such care and the barriers to accessing it as well as in-depth data about traditional beliefs about the causes of physical difficulties and their traditional treatment.

A few studies have pointed to the importance of cultural factors in planning rehabilitation services in areas of PNG (Byford, Veenstra, and Gi, 2003; Byford and Veenstra, 2004; Gibbs, 2003). Byford and Veenstra (2004) conclude that an understanding of the socio-cultural context is a prerequisite and that services will fail unless they are acceptable and local beliefs are respected. The report edited by Gibbs (2003) recommended continuing to find ways of bridging the communication gaps between biomedical understandings of illness and commonly held supernatural perceptions of their causes.

Data collection regarding prerequisite conditions in the working environments of the diploma physiotherapists is ongoing in hospitals with physiotherapy departments throughout PNG. Therefore this question will not be addressed in this paper.

¹ The Disability Research Project was an initiative by Callan Services for Disabled Persons, in collaboration with VSO, The Melanesian Institute and DWU, with funding from DKA Austria (Three Kings Action of the Catholic Youth Group) and Cordaid. The Disability Research Project piloted ways of finding out the proportion of people in Papua New Guinea who can be classed as disabled. See Thornton and Pirpir (2007).

Methods

To gather the data required for the study, the project made use of interviews with purposively selected persons who had been classed as disabled in the Disability Research Project.

Sampling

The Disability Research Project had carried two large-scale surveys in Eastern Highlands Province (EHP) of Papua New Guinea: one in a rural highlands area within Lufa District (January 2006), a one hour drive from Goroka, the provincial capital of EHP. The other one was carried out in Goroka urban area (April 2006). These two surveys provided the sampling frames.²

These surveys identified the types and extent of activity limitations perceived by respondents. The core activities asked about were hearing, seeing, moving, talking, learning and remembering. Initial sub-samples were drawn from those who reported in the surveys a lot of difficulty with or could not do at all at least one of the following moving activities:

- walking a short distance
- walking a longer distance (about 400 metres)
- lifting or carrying something like a bag of vegetables
- lying down and getting up again
- bending down and picking up something from the ground like a sweet potato
- using fingers to hold something like a spoon.

The achieved sample was 46 people, who were interviewed. This number is lower than was anticipated due to difficulties locating people in the sample. Issues concerning preparation of the ground, cooperation on site, money issues and seasonal activities affected the final number of complete interviews. Twenty-one participants were drawn from the Goroka sample and 24 from the Lufa sample. A further one person interviewed in Lufa was not one of the survey respondents.

Interviewers

The ten interviewers were second year physiotherapy diploma students, supervised by Physiotherapy Department and Disability Research Project staff.

² The sampling excluded respondents who in the Lufa survey had answered in Tok Ples only, as the Department's study was not equipped to interpret from the local language (Yagaria). Only one of the three wards included in the Lufa survey was targeted. Lufa and Goroka participants in another follow-up study under the auspices of the Disability Research Project were excluded. Thereafter, the sampling was purposive. An age spread was sought. Priority was given to respondents who in the Disability Research Project surveys had said they had an unmet need for help. The surveys' responses on perceived causes were taken into account to ensure a cross-section of beliefs.

They were offered a 26 Kina fee each and a 10 Kina per diem over six days of interviewing. Participation brought an academic credit for an introductory research unit to be delivered in the following year. The Disability Research Project Coordinator provided the two-day preparatory training and orientation. As part of this training fieldwork practice was arranged with patients of Modilon Hospital Physiotherapy Department during one part of a day.

Interviews

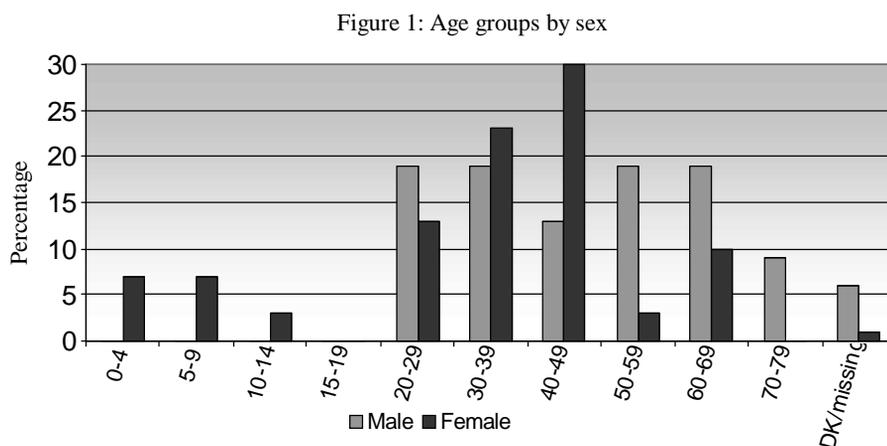
Ethical approval for the proceedings in the study was cleared by the DWU Ethics Committee. The Medical Research Advisory Committee (MRAC) had already approved this project as a follow up study to the Disability Research Project, so the Divine Word committee restricted itself to the ethics of the involvement and research activities of Divine Word staff and students.

The interview schedule that was used had a quantitative and a qualitative part. In the quantitative part a body chart was used for marking reported areas of pain, numbness, amputation or paralysis. Participants were asked in a standardised way about their degree of difficulty with 16 moving activities on a four point scale: no difficulty, some difficulty, a lot of difficulty and cannot do at all. They were shown photographs of the activities with a verbal explanation in Tok Pisin, the most common language in PNG. After their response to each activity they were asked about the degree of associated pain on a six-point scale, with reference to a validated pain faces scale. Interviewers then carried out an objective assessment, measured on the same four point scale of degree of difficulty, of four observed activities: lift one hand to the head; sit to stand; stand to sit; and walk six metres.

The qualitative part of the interview was semi-structured with topics lead by prompts that focus on the circumstances, requirements, attitudes and experiences of people with a physical disability in PNG.

The socio-economic characteristics of participants, taken from the surveys, are briefly as follows.

As represented in Figure 1, half of participants were aged 40 and over and only one in ten were less than 15 years of age.



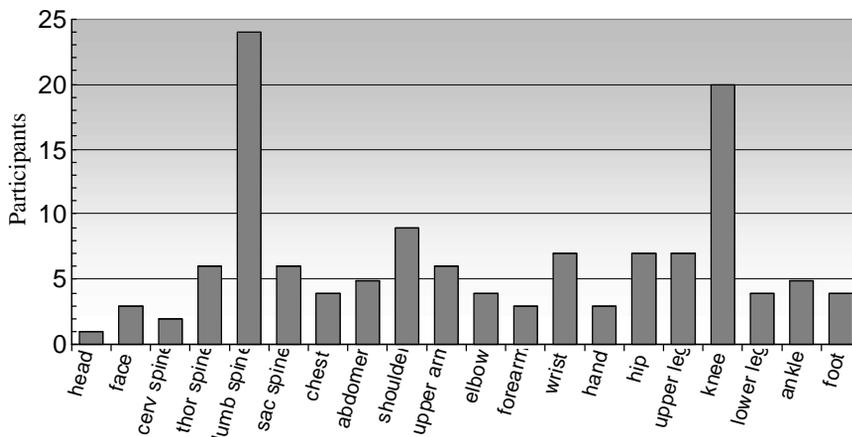
Higher proportion of Lufa participants than Goroka participants were in the 40 to 59 age bands. Twenty of the 46 participants reported in the surveys their main activity in the last seven days as gardening for own use only. Fifteen of these were in Lufa. A further four reported their main activity to be gardening for money. Nobody had a waged job as their main activity. Three were doing no work because of their disability. Almost half of the participants (22) had never attended school (14 in Lufa and eight in Goroka).

Results

Pain

Thirty-one in 46 participants said they felt pain when moving some part of their body and that because of the pain it was difficult to move that part of their body. Figure 2 summarises the data into main body parts. Pain in the lumbar spine and in the knee prevailed most, followed at long distance by shoulder pain.

Figure 2: Reported pain in body parts



One person was missing a lower right leg, amputated through the knee joint. No participant showed obvious paralysis.

Activity limitations

Figure 3 shows the degree of activity limitation reported by participants. The activities are ordered by presence of difficulty (the sum of 'some', 'a lot' and 'cannot do at all'). Thus the further an activity is positioned to the right of the graph, the more likely it is that this activity causes some degree of difficulty. It can be seen that lifting a five-kilo weight is the greatest area of reported difficulty and reaching a hand to the head and grasping with fingers the two least.

Figure 3: Kind and degree of moving difficulty

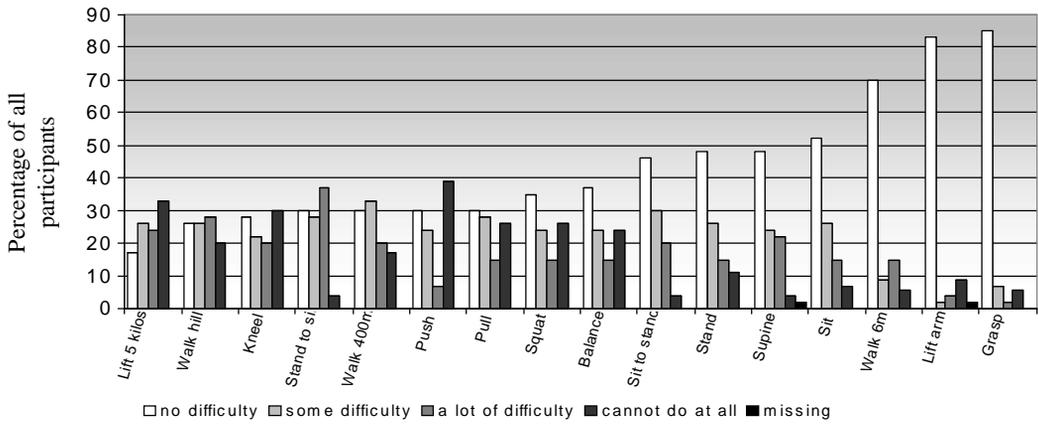
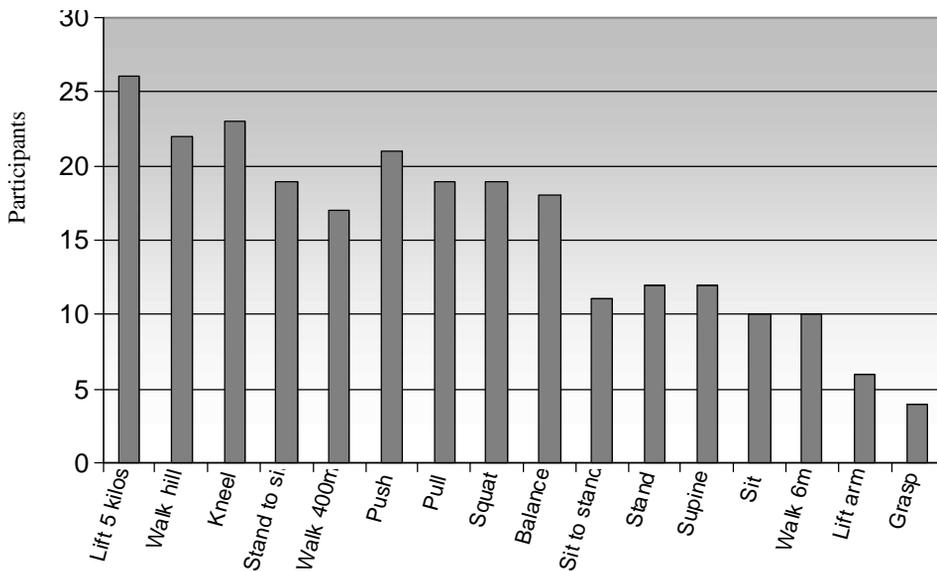
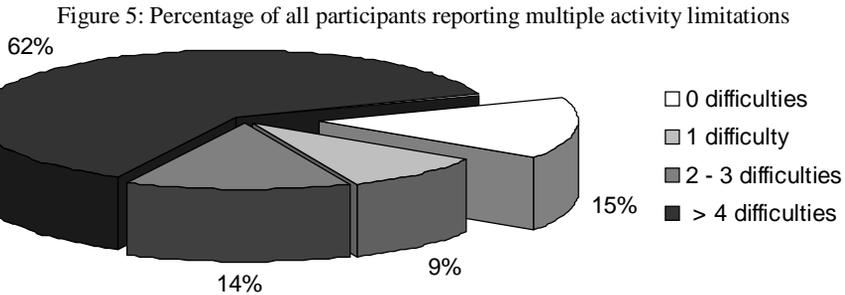


Figure 4 shows the results from those respondents experiencing higher degrees of restrictions in their activities. The two main differences compared with figure 3 lie with difficulty pushing with force and walking 400 meters. Examination of the socio-economic characteristics of the participants experiencing the highest degrees of restrictions found that there was a higher proportion of women reporting ‘a lot of difficulty’ or ‘cannot do at all’ with the top four activities. It also showed a higher proportion of ‘a lot of difficulty’ or ‘cannot do at all’ in the rural areas as well as a high amount of people (50% to 61%) that worked in the garden, either for their own use or for money, or in the house as their main daily activity.

Figure 4: ‘A lot of difficulty ‘ and ‘Cannot do at all’ combined



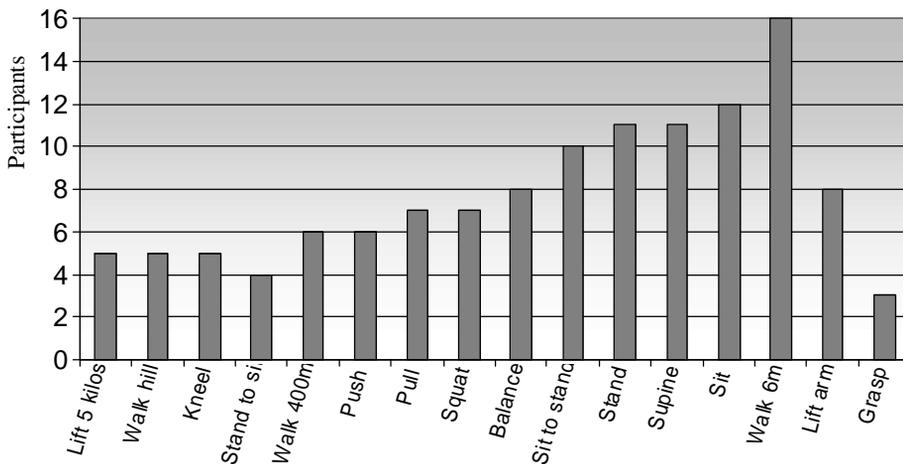
When an analysis is made of the number of activities for which participants reported ‘a lot of difficulty’ and ‘cannot do at all’ the picture in Figure 5 emerges. 85 percent had a lot of difficulty with or could not do at all at least one activity, which is not surprising regarding the sample. More surprising is 62 percent of the respondents reporting serious difficulties with four or more activities.



Associated pain

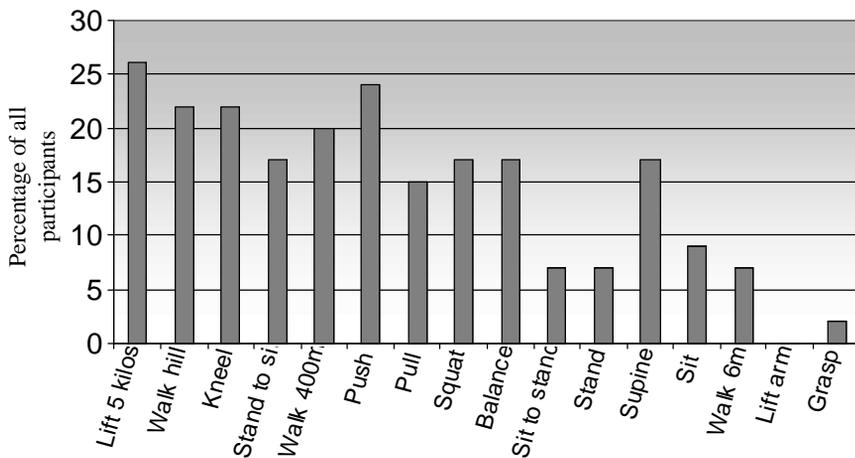
Comparison of the spread of degrees of reported pain associated with the 16 activities shows a correspondence at the extremes as well as an overall correspondence: lifting a five-kilo weight is the greatest area of reported pain and lifting a hand to the head and grasping the two least. The association between degree of reported activity limitation and degree of reported pain is mixed. An interesting finding is the number of participants reporting both no activity limitation and also some degree of pain associated with the activity, as shown in Figure 6. The number ranges from three (grasping) to 16 (walking six metres). These were mainly the activities in the midrange, with which people did not report a lot of difficulty or pain. This finding suggests that participants distinguished appropriately between the question about difficulty (*hevi*) in the physical action of moving and the question about pain (*pen*) associated with it.

Figure 6: No difficulty but some degree of pain



When ‘a lot of difficulty’ and ‘cannot do at all’ combined are associated with ‘big pain’ and ‘extreme pain’ combined, the picture in Figure 7 emerges, showing the most serious combination of difficulties and pain. It can be seen that no more than 26 percent of the total 46 participants fell into this group for any one activity (bearing in mind that pain could not be recorded in three young children).

Figure 7: ‘A lot of difficulty’ and ‘Cannot do at all’ combined with ‘Big pain’ and ‘Extreme pain’



Effects on participation

The question set following that on activity limitations and associated pain focused on participation in the following five life areas:

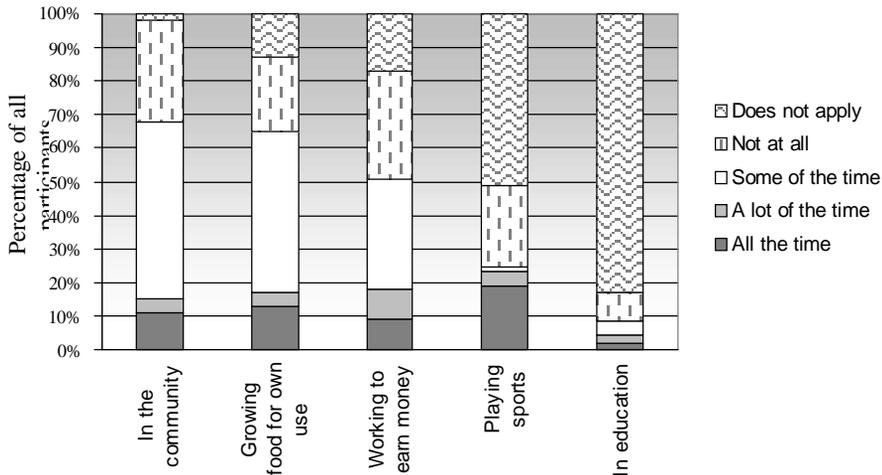
- in the community, such as going to market, church or local get-togethers (bikpela bung long ples)
- growing food for own use only
- earning in the formal or informal economy (wok moni o moni yu kisim long wok bilong yu)
- playing sport
- in education (long skul).

For each life area the interviewer asked the participant if their moving difficulties reduced the amount or kind of activity they could ‘do not at all’, ‘some of the time’, ‘a lot of the time’ or ‘all of the time’. Apart from in the case of participating in the community, interviewers first checked if the activity was something the participant usually did or something they would not want to do even if they had no difficulty.

Figure 8 shows that two in three of the participants reported some degree of restriction in both taking part in community life and growing food for their own use, each an indispensable part of Papua New Guinean culture and life. Half of

the participants felt restricted in earning money. In affecting limitations in activities and pain physiotherapy is likely to decrease the restrictions experienced in the life areas mentioned above that appear to deliver problems to a large proportion of the participants.

Figure 8 Restriction in taking part in community life and growing food



Not many restrictions were felt in the area of education, which can be explained by the number of respondents of school age (22%) and small number of people having experience of formal education.

Perceptions of causes

The qualitative part of the interview considered the perceived causes, use of healthcare services, aids and adaptations and traditional treatments.

Difficulties experienced were attributed to a range of causes. The causes mentioned can be divided into four groups: medical; socio-economic; cultural traditions; and religious.

Medical causes

A small group of participants had worked out in their own minds a causal relationship between hospital treatment and the onset of their difficulty. For instance there were beliefs expressed by a group of women that their pain or moving difficulty started with the birth of a child because of methods used to induce labour, a Caesarean, a difficult birth or an abnormal birth.

A lack of medical intervention, e.g. lack of immunisation as a child, was mentioned as a perceived cause in two cases.

There are two sets of beliefs about the part played by injuries. Some people assumed that the effects of injuries in the distant past – a stabbing, a fall or a weight landing on them – became apparent many years later. Others cited recent injuries – playing soccer, playing rugby, a fall from a banana tree, an injury pulling up a coffee tree root – for which they had received immediate hospital treatment. In a review of what is known about trauma by Watters and Dyke (1996) it is said that trauma affecting women is often the result of the prevailing very high levels of wife-beating, the most common injuries in one study of domestic violence being fractures. They estimate that 25 percent of the cases of injuries from domestic violence result in permanent disability. In this study there was one case in which a young woman said her pains had started after a case of sexual harassment.

People who had sought medical advice sometimes cited a medical diagnosis (but there were complaints that hospitals had not given a ‘proper’ diagnosis).

Socio-economic causes

A large sub-set of participants believed that hard physical activity had caused or contributed to their difficulties. They spoke of the assumed effects of walking extreme distances, carrying excessive loads on their back or shoulders, digging in their gardens and work about the house. The effects of aging were also referred to, though one older person disputed their family’s view that aging was the main factor.

Cultural causes

Traditional causes predominated. *Poisin* was widely mentioned by name as a perceived cause of disability. *Poisin* can be described as an attempt to do harm, and revenge, often because of jealousy, anger or perceived wrongdoing. It was associated with different actions, incidents or circumstances: drinking coffee from an enemy clan; digging a father’s grave; being speared in the leg by ‘an invisible person’; stepping over dry grass; attending a funeral; and returning to the village to take part in a *sing sing* (traditional dance). *Poisin* usually was thought to have had a quick effect. Examples include being unable to walk the next day, immediate swelling of legs or knees, and leg boil and swelling occurring soon afterwards.

Sanguma can be understood as a possibly deadly form of *poisin*. Of the few people who implicated *sanguma* one was not precise about what took place, just that a *sanguma meri* (woman perpetrating *sanguma*) ‘did something’ to harm a child with a medical diagnosis of cerebral palsy.

People did not specifically refer to breaking taboos but their accounts suggest that was the underlying belief. One belief was that all family members would be afflicted with pain (a kind of ‘traditional genetic belief’, according to the interviewer) if they cut a tree, built a house or cleared bush in the location

where a part of a pig, over which words had been said, had been put in the bark of a special tree.

Religious causes

Two men with strong Christian church associations believed that their accidents and injuries were God's punishment – for wife beating on a Sunday and for hunting instead of attending church.

Certainty, doubt and multiple beliefs

The listing of causes people mentioned does not give a true picture of the complexity of belief systems. The largest group were clear about a single cause of their pain or difficulty. Amongst this group medical and socio-economic causes were the main perceived causes. Many of these respondents wished to impress on the interviewers that they were Christians who did not believe in *poisin* and the like. On the other hand, there were people who firmly believed *poisin*, *sanguma*, spells, something *long ples* (from the village) or God's punishment to be the single cause. Beliefs in such causes typically went hand in hand with seeking western medical treatment.

It was unusual for people to say they had no idea about a cause, a finding that supports the value of in-depth questioning as opposed to survey methodology.

It sometimes emerged that participants, family members and people outside the family held markedly differing beliefs. Accounts suggest that some people believe in more than one cause. These combinations of causes lie within the medical / socio-economic paradigm, but some combinations cross paradigms: for example, hard physical work and *poisin*; breaking a taboo and an idiosyncratic belief about blood flow; neglected pre-natal health and *poisin*. A particularly interesting combination is that of some belief in medical diagnosis and belief in *poisin*, *sanguma*, breaking taboos or spells. A mother admitted that she thought two things at once about the cause of the child's difficulty: medical diagnosis of tuberculosis meningitis and *masalai* (evil spirits).

One way of understanding how beliefs cross medical and traditional cultural paradigms is to conceive of *poisin*, for example, as the fundamental cause and the medical condition as the consequence. Thus a participant can say on the one hand that they were convinced that the difficulty arose at childbirth and on the other hand that a *sanguma meri* was responsible. Similarly, men who incurred injuries on the Sabbath view them as the consequence of the fundamental cause of offending God.

Use and experience of health services

The level of help seeking was very high. Hospital was by far the most common place where people looked for help (mainly in Goroka respondents), and people in Lufa had visited aid posts or health centres. People who had

undergone the trauma of an accident typically sought hospital treatment straight away. Otherwise, it seems from the information available that adults mostly sought help for their difficulty soon after the onset of the problem or, occasionally, when the pain worsened.

Experience of treatment in out-patient departments as well as an in-patient was overall more negative than positive. Some experiences dated from many years previously. The two main areas of dissatisfaction with hospitals related to treatment and to staff behaviour and attitudes. Other reasons for not returning to the hospital for healthcare were queuing, unwillingness or inability to pay for fees and medicines and lack of money for transport especially among the people coming from Lufa.

Six people had seen a physiotherapist or physiotherapy aid via the hospital. It should be noted that a physiotherapy department at Goroka Base Hospital was established after the time when several people sought hospital help. They were three adults and three children. Parents of disabled children were extremely satisfied with the physiotherapy advice that their child received. All three parents spoke of being shown exercises, attending weekly for exercises, at least at first, and of advice on exercising at home. All reported signs of improvement in the child.

Two of the three adults brought up barriers to continuing with physiotherapy. Once the physiotherapist who had provided highly satisfactory treatment had left, the person had no confidence that proper treatment would be given. One person from Lufa had severe doubts about the effectiveness of physiotherapy, especially as no medicines were given, and also faced the barrier of distance.

Some of those who got physiotherapy help had previously tried other treatments in addition to hospital or health centre/aid post medical consultations. One child had received weekly exercises from Mt Sion community based rehabilitation centre from the age of eight months as well as practical help from Callan Services at Wewak. Another child, before consulting the hospital and being referred to physiotherapy, had seen a *Mambu Man* (type of traditional healer) with no effect. The same child had shown some improvement through use of rubs for joints (banana leaves and *salat* (kind of nettle leaf)).

Community based rehabilitation advice; exercises and provision of parallel bars were well received in some cases in Lufa.

Aids and adaptations

Within the group of 46 people interviewed in the follow-up study, sticks emerged as a prominent aid. Sticks cut from a tree, a metal stick, an umbrella and a store-bought stick all had helped considerably with balance, stability and weight-bearing in activities such as gardening, climbing hills, walking generally and using the toilet. Sticks relieved pain too. The one person with a

prosthesis found it hurt his amputated leg and so relieved the pain with the use of two sticks. Sticks were universally helpful, easy to use and easy to come by.

Crutches typically had been used for short periods only when the difficulty was at its height. Experience with crutches was mixed. For one person they suited the town environment but for another they were unsuitable for life in a stilt house. A wheelchair borrowed from the hospital had been helpful for hospital visits, though not suitable for home use.

Aids to promote child development were highly valued, although not affordable for all who were in need of them. A Lufa community based rehabilitation worker had built parallel bars, which were said to have brought a lot of improvement to the child.

Reasons for not seeking health services

People who had never gone to a hospital for help with their difficulty were asked to explain why. Reasons given fall into four groups: fear; preference for 'bush medicine' or herbal treatments; access barriers; and satisfaction with aid-post and health centre services. What people liked about aids posts and health centres was knowing the staff, their friendliness and their openness to further consultations whenever needed.

Local treatments and remedies

It is interesting to look at other kinds of help seeking amongst those who did not go to a hospital, health centre or aid post. There appeared to be a wide use of different local treatments and remedies. Although numbers involved are low the findings are striking. In traditional rituals a bush medicine man drained blood from persons back by piercing with small spears. In prayer rituals a pastor prayed over the water and gave it to the child to drink and poured it on its leg. In local remedies respondents reported seeking advice from a herbal doctor who cut the swollen skin to remove dead blood from their knees. These treatments and remedies can be divided in herbal medicines, invasive self-treatments, treatments administered by healers, either invasive or conservative, and prayer rituals.

There was a widespread use of herbal or leaf remedies that were prepared and used in many different ways. These remedies were often recommended by village people or taken in consultation with herbal doctors or traditional healers. There appeared to be widespread beliefs in efficacy with immediate results, commonly after only one application. Decrease of pain, swelling and stiffness was attributed to these kinds of remedies. Herbal remedies were commonly used if the medicine prescribed by the hospital proved to be not effective.

One participant explained a village practice in which he himself uses a spear to poke out waste blood in his back. This was said to be very helpful. People also

reported cutting the skin of their swollen knee to remove the 'dead blood' from the knees.

Relatives, community leaders and village people often recommended bush medicine men or traditional healers. They were often consulted in succession to a hospital consultation. Overall the reported results of the intervention of a bush medicine man or healer were positive. Two people reported the practice of a traditional healer who hit a painful back with *salat* 'to move the blood', then used small spears to drain the blood. This decreased pain and swelling in both subjects. Another traditional healer shot broken glass into the waist of one of the respondents with small arrows to remove 'dead blood'. Apparently this eased walking and pain a little. One healer was reported to cut knees with a bottle and to pour pig fat and leaf juice in the cut. There was another report of a *mambu man* who cut somebody's back and poured liquid into it. This decreased pain and the respondent reported to be able to walk long distances again and that she had got her weight back.

There were several reports of *mambu men* that prepared dietary remedies. It either helped a lot or not at all, to the surprise or frustration of the subjects. A grandfather was reported to try to say traditional spells and to pull on a child's leg, however this didn't work.

In several reports it was said that prayer was used as a method to relieve problems or to remove *poisin*. Once a pastor prayed over water, gave it to the child to drink and poured it on the child's leg. The next day walking improved and the parents were very surprised.

Conclusion

The first part of the research project by the Department of Physiotherapy of Divine Word University reported here aimed to find answers to two questions, so that a review of the Divine Word University Physiotherapy curriculum can be well informed.

The first section of the study concerned the kind and proportion of impairments, activity limitations and restrictions in participation that are found commonly in the people in PNG, among sub-samples drawn from large-scale surveys. Findings in this study have shown that most prevailing combination of impairments, limitations in activity and restrictions in participation builds a profile of a 'standard' person reporting pain and difficulty in Eastern Highlands Province. This person shows a logical combination of lower back and knee pain with problems lifting, pushing, kneeling and walking on rough terrain. They were restricted in participation in community life, gardening for own use or for sale, and other work to earn money, all elementary areas of participation in their communities.

It was seen that pain may lead people to seek treatment whereas activity limitation without pain appears to be accepted with less question than if there is associated pain. As a consequence physiotherapists and community based

rehabilitation workers might be advised to also encourage people to seek help with what limits activity, and hence participation possibly, but does not cause pain.

Examination of the socio-economic characteristics of these participants showed that they were mainly women in rural areas who worked in the garden, either for their own use or for money, or in the house as their main daily activity. In the light of the data reported by Watters and Dyke (1996) on the prevalence of domestic violence and their assumptions about the high rates of subsequent disability, women seem particularly vulnerable.

The causes of the difficulties that people experienced were perceived to be of various origins. Striking was the predominance of people reporting that hard physical work and ageing were the cause of their problems, as well as a large group of people naming traditional cultural events, like *poisin* or *sanguma*, as the origins of their moving difficulties. People also believed that the causes could be simultaneously on different levels; poisoning as punishment for some perceived wrongdoing of the mother or another family member was thought to have caused cerebral palsy in a child because of a birth trauma.

On the level of service use and the barriers to these services people appeared overall not to be reluctant to visit the hospital, although their experiences were mostly negative. Travel time and costs, queuing and costs of treatment were barriers to accessing health services. Knowing the staff facilitated accessing health care services. The small group that had consulted physiotherapy services was positive about the results.

The greater part of the respondents reported having used local traditional treatments. This often involved herbal remedies, but also invasive and dietary treatments were carried out. Herbal treatments may well have pain-reducing and swelling reducing properties. Some of these are not dissimilar to Western alternative medicines. Their properties might be investigated further.

Increasing awareness on different levels seems to be a key issue for improving services for persons with a disability in PNG (Pronk, 2006). Within the communities there is a lack of awareness of the bio-medical causes of disability, as well as a lack of awareness of the services that are available to decrease the impact of moving difficulties that result in restrictions in participation in everyday life. Since the hospital is by far the most common place where people – especially from the urban area – seek help, they could be well served with physiotherapy. Amongst hospital staff awareness of availability of physiotherapy and community based rehabilitation, as well as knowledge when to refer to these services is essential to increase the benefits of physiotherapy. Building on the low numbers of people having accessed community based rehabilitation but the high levels of satisfaction with this service it must be emphasized here that a stronger link between physiotherapy services and community based rehabilitation is needed to improve and sustain services for people with disabilities in the rural areas.

Physiotherapists and community based rehabilitation workers can be advised to recommend simple sticks, for instance made from 'bush material', as they were widely used and considered to be very helpful.

There is a challenge for physiotherapy to consider faith in effectiveness of physiotherapy treatments. When people used traditional healers once only often there were clear expectations of an immediate cure. A few only consulted them more than once. Physiotherapy needs to explain to patients with cultural beliefs that a full course of treatment is essential. To make this work, of course, access barriers must be tackled. Awareness should also be raised among allied health professionals on how to work effectively alongside the traditional cultural beliefs of causes and traditional treatment methods. Very positive experiences of community based rehabilitation showed how it is important to reinforce the link between physiotherapy and community based rehabilitation in terms of regular training and outreach programs.

The research methods proved not to be appropriate to detect children with disabilities, therefore a different design should be developed for this cause.

The project, being the first of its kind in the country of Papua New Guinea, was effective in gathering useful information and recommends a follow-up study to be carried out in a different area of PNG to compare and complement results.

The review of the Physiotherapy curriculum will be informed by the results of this study but it is clear that more information is needed before any major adaptations can be made.

However some preliminary additions are recommended to be included in the curriculum. Topics that are recommended to be included are:

- Traditional beliefs and physiotherapy
- Traditional and western medicine and physiotherapy
- The use of local resources for aids and adaptations.

The Department of Physiotherapy plans to conduct further research using hospital records as well as a follow up study with another sample to replicate this first research project. Meanwhile the first graduands have completed their residency period of 12 months in December 2007, and in the light of further feedback the curriculum is expected to be revised. This revision will be the responsibility of the present staff, rather than these authors.

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Authors

Froukje Pronk is working in the field of disability and development with a background in physiotherapy from the Netherlands. As a VSO volunteer she taught the Physiotherapy Diploma program at Divine Word University in Madang, Papua New Guinea in 2005 and 2006.

Patricia Thornton is a disability and employment researcher from the United Kingdom. She has conducted numerous international comparative studies on employment and disability. As a VSO volunteer she coordinated the Disability Research Project in Papua New Guinea.