Effectiveness of the Sensory and Motor Rehabilitation Program (SMRP) for MDVI in Hong Kong

Barbara POON (The Hong Kong Society for the Blind)

I. Our Programme - The Sensory and Motor Rehabilitation Program (SMRP)

SMRP is a program to promote ability beyond disability. Although our clients with Multiple Disabilities and Visual Impairment (MDVI) face many barriers physically and mentally, we want to look beyond their disabilities using a well-integrated method among our interdisciplinary team.

Our program is eager to study musculoskeletal, neuromuscular and sensory disorders that are associated with abnormal control of posture and movement in our clients. They all suffer from visual impairment, mental handicap and other disabilities. Some have significant deficits in proprioception and sensory motor function, and have primitive reflexes in the nervous system. The SMRP is driven by the close collaboration between a group of professionals relevant to rehabilitation.

The Sensory and Motor Rehabilitation Program (SMRP) is a valuable form of active care and rehabilitation program to bring interactive and sense of achievement to our MDVI clients. This form of interactive rehabilitation and training is aimed at strength-based, endurance, cardiovascular fitness and flexibility, increasing their independence in daily living and their ability to function in social interaction, which leads to happy living and sense of autonomy. In this paper, we would like to share our project, named “Integrated Sensory-motor and rehabilitation program (2006-2010)” for MDVI in Hong Kong and how it can be used to improve cognitive function in association with behaviour and physical function and enhance the quality of life of the MDVI.

II. Our Target

We have a total number of 63 clients. They all suffer from visual impairment, mental disability and other disabilities. We also have 7 clients who suffer from deafblindness.
The degree of mental handicap of the subjects is as follows:

- Mild: 15
- Moderate: 21
- Severe: 27

The degree of visual impairment of the subjects is as follows:

- Blind: 37
- Low Vision: 19
- Deafblind: 7
Age Profile of the subjects

- Older than 41 years: 34
- Less than 41 years: 29

Communication Mode of the subjects

- Verbal: 40
- Tactual Sign Language: 7

No of Clients

No. of client
III. Our Intervention

The Sensory and Motor Rehabilitation Program (SMRP) has been started at the Morning Glory Day Activity Centre cum Hostel since 2006. Morning Glory Day Activity Centre cum Hostel remains the only center that provides rehabilitation services specifically for MDVI clients in Hong Kong.

Sensory systems play a major role in the control of locomotion. These systems include the proprioceptive, vestibular and visual systems. Visual impairment can affect the equilibrium of these systems, resulting in problems in balance, posture, coordination, tension of neck and shoulder muscles, and loss of spinal rotation and reciprocal arm swing. When our clients suffer from dual sensory impairment such as deafness and blindness, this further aggravates this balance as each affects balance and posture. As a result, independent navigation becomes difficult.

Regular physical exercises can help to improve the proprioceptive sensory system and enhance our clients’ self-esteem, self-confidence, willpower, and power of concentration and contribute to a “relaxed mood”. Optimal physical condition and balance are vital for our clients to determine their own position in relation to the environment and enhance their level of independence.

The physical intervention used has been designed to develop balance and coordination, and relax the neck and shoulder muscles. We believe that good posture helps visually impaired and deaf-blind clients to determine their own position in relation to the environment.

Assessment Tools:
Motivating visually impaired or deafblind clients to perform regular physical exercises can be challenging given the restrictions imposed on independent functioning. Motivation is enhanced through sharing the different measurements performed before and after the training period, including weight, blood pressure, flexibility of upper body, flexibility of trunk and gait analysis. Tools that we adopted in our assessment process as follows:

- Berg Balance Test
  This is used to identify our clients’ balance impairment.
- Risk of Fall Checklist
  This is to provide a profile for our clients in terms of fall.
- Behaviour Analysis
  This is to provide a picture of our clients’ behaviour.

IV. Programme Highlights:

We use multi-sensory approach that utilizes auditory and kinesthetic-tactile instruction in combination to facilitate interactive learning and to enhance their memory and learning. Multi-sensory stimulation enables our clients to explore and to fulfill their sensory needs. Although our clients cannot see; but they can use other senses to experience things around them.

Interacting in a multi-sensory environment offers one way of improving social interaction and increase opportunities for interaction to take place. It also increases opportunities for our clients to make choice and reduce the number and frequency of interruptions from ordinary centre activities. In this connection, we adopt sensory stimulation not only in a multisensory environment but also in daily living in order to provide a particular type of sensory input that can have
a calming and organizing effect on a client’s central nervous system. It is most often used for clients who have been identified with sensory defensiveness, especially tactile defensiveness.

The use of an aromatherapy oil burner enables our clients to feel warm and comfortable throughout the session. Paraffin wax provides deep moisturizing and hydrating effect. It promotes blood circulation and relieves fatigue. Paraffin wax is a good treatment for our clients with rheumatoid arthritis since it has an effect of pain reduction. Some of our MDVI clients suffer from behavioural and emotional problems and they have a habit of biting hands and fingers. Therefore, the dipping of their hands in paraffin wax will leave their skin soft and moisturized. Foot spa is also effective to accelerate our clients’ blood circulation, eliminate foot fatigue and pain.

We believe that the use of music can enhance the sensory input of our clients through auditory and vestibular systems because it has a calming effect. We use Soundbeam as a method to provide sensory input to our clients. It provides a medium through which our clients can become expressive and communicative using music and sound. The sense of control and independence can be a powerful motivator, stimulating learning and interaction in other areas.

Using technology indirectly – the Soundbeam, aims simply to relax with the client in a multi-sensory and interactive environment. Soundbeam means that even the most unreachable or immobilized clients can ‘play’ independently. Secondly, electronic technology makes available a huge palette of possible sound world, releasing the player from the traditional limitations of percussion-based activity. This program enhances task attention, spatial-temporal organization, visual motor skills and timing of coordinated movements.

V. Key factors for the success of Sensory and Motor Rehabilitation Program (SMRP)

We emphasize strength-based as one of our approach for MDVI with complex learning difficulties, which may include visual impairment, hearing impairment and / or dual sensory impairment and intellectual disabilities. Positive learning and successful experience can increase clients’ active participation and social interaction. We encourage our team to:

- Know in advance the client’s preferences and motivations
- Make them pleasurable
- Use technology to match these and to help the client be active and sociable
- Introduce real life situation in the context of familiar play and social routines, within the programme such as facial, spa, massage, sunshine walk, fitness exercise etc.

VI. Effectiveness of SMRP

Results of the Berg Balance Scale are used to identify areas of impairment and the effects of the impairment on function. The pre SMRP and post SMRP results are useful indicators in developing treatments that will restore the patient’s balance and mobility or identifying interventions to prevent our clients from fall. The test can also be used to evaluate and document progress over time.

Results are interpreted as:

- Result from Pre-SMRP Berg Balance Scale Analysis has shown that there are 25 clients who can walk independently. However, after a period of SMRP training, it has been increased to 31 clients who can walk independently.

  1. Less than 45: walking with assistance
  2. More than 45: independent
Berg Balance Scale Analysis
Pre-SMRP

Less than 45  More than 45  Refused BBS

Berg Balance Scale Analysis
Post-SMRP

Less than 45  More than 45  Refused BBS
Result from Pre-SMRP Risk of Fall Analysis has shown that there are 11 clients who are classified in the high risk of fall category. However, after a period of SMRP training, it has been reduced to 9 clients who are classified in the high risk of fall category.
Result from Pre-SMRP Behaviour Analysis has shown that there are 22 clients who have shown behaviour problem. However, after a period of SMRP training, it has been reduced to 19 clients who have shown behaviour problem.
**Interviews with staff in terms of effectiveness of SMRP**

There are five Social Workers and four Instructors working with MDVI clients being interviewed on a regular basis, their responses are analyzed. They all have perceived positive changes in MDVI clients’ behaviour and emotions after the program. MDVI clients have been mentally stable, happier, more active and have had better social interaction.

**Interviews with MDVI clients in terms of effectiveness of SMRP**

Our clients have reported to us as feeling more ‘fit’. They feel better both physically and mentally. The SMRP experience allows our clients to achieve a sense of personal fulfillment.

**Observation from the team in terms of effectiveness of SMRP**

Since it is often difficult to interpret observations made of a client whose behaviours are inconsistent, we encourage our team to take records on different interaction, mood and communication of our clients, such as video recording or take notes so that we could compare responses in the multi-sensory environment and interactive programme activities to the client’s responses outside that environment. The effect of SMRP on improving the behavioral problems of the multiple disabilities with visual impairment is noted. We have applied to compare the frequency of undesirable behavior during 2009 to 2011. We found that the decrease of undesirable behaviors is noticed.

We have noticed 3 areas of progression from our clients post SMRP:

1. From confined to verbally expressive
2. From involuntary to voluntary
3. From isolated to integrated

The use of sensory stimulating equipments such as bubble tubes, musical walls, fibre optic lights that seem to improve MDVI clients’ sense of well-being and positive emotions. On touching the equipment, lights and colours changed, including a sense of control over the environment, which also promote positive emotions. The dim lights and soft music help our clients relax and feeling less anxious.

The SMRP program enhances our clients’ task attention, spatial-temporal organization, visual motor skills and timing of coordinated movements. It encourages our clients’ self-advocacy and we encourage them to ‘own’ their experience by communicating with others and facilitate them to make their own choices.

**VII. Conclusion**

We have noticed that even if clients suffer from multiple disabilities and have different personalities, they can still participate actively in rehabilitation programme specifically designed for them. We concentrate on the idea that increase happiness is to reduce “have-to” and to increase “want-to”. This programme offers to enrich MDVI clients’ lives, promote independence and help them to reach for choice, freedom and happiness and to improve quality of life.
VIII. References:


