Rehabilitation Practice and Science

Volume 14
Issue 1 *Taiwan Journal of Physical Medicine and Rehabilitation (TJPMR)*

Article 13

12-1-1986

Age, Gender and Aphasic Type in Stroke Patients

Chein-Wei Chang

Chue-Fun Chen

I-Nan Lien

Horng-Jeng Shyn

腦中風引起的失語症型式與年齡和性別的關係

國立台灣大學醫學院附設醫院 張權維 陳秋芬 連倚南
海軍基隆基地醫院復健科 徐弘正

本文的目的在探討栓塞性腦中風所引起的失語症型式與年齡和性別的關係。在1980年10月至1984年12月間，台大醫院復健科共收集75例因左腦栓塞而引起失語症的病人，其中有51例男性和24例女性，年齡在38到85歲之間，平均年齡爲60.4歲；對於失語症的評估測驗以波士頓失語症檢查法作檢查，並將失語症分爲Broca失語症、Wernicke失語症、名稱性失語症、傳導性失語症、全失性失語症及經皮質層感覺性失語症等型式。

在各類失語症中，Broca失語症的平均年齡爲54歲，明顯的比全失性失語症的平均年齡64.6歲和經皮質層感覺性失語症的平均年齡61歲都小，顯示Broca失語症較易發生於年齡較輕者，而年齡較大者發生全失性失語症和經皮質層感覺性失語症的機會較多，至於男女兩組失語症病人在平均年齡上並無明顯差異，但失語症的發生率男性比女性多，且性別上的差異也與失語症的型式有明顯相關。

本研究的結果與多數國外學者的報告相似，顯示在不同的語言文化下，失語症病人平均年齡的分佈及性別上的差異仍極爲相近，這對於引用國外資料在國內失語症的診斷和治療上將有所助益。

關鍵詞（Key Words）：腦梗塞（cerebral infarction）
失語症種類（aphasic type）

前 言

雖然過去有些神經學家提到失語症的型式與年齡有關，但也有些學者認爲沒有明顯的差異，直到1978年Obler[1]以167例因腦中風引起失語症的病人作研究之後，多位學者也在研究[2－4]中相繼發現Broca失語症易發生於年齡較輕者，而年齡較大的病人發生理解力障礙的Wernicke失語症較多；至於性別的差異與失語症型式上的探討，目前雖未有定論，但有些學者認爲性別上的差異與腦半球在語言功能控制上的優勢邊（dominant hemisphere）及左右側性（laterality）有關，Wada[5]與McGlone[6，7]等人的研究都發現男性在腦部控制語言的功能上比女性偏向於依靠左腦半球單側性，所以在單側的腦部病變所發生失語症的機會，男性比女性大。

由於語言結構與文化背景的差異，加上國人慣用右手的傳統觀念，造成腦部在語言功能的控制上，依靠左腦半球單側性的偏向比外國人明顯，本文以國內75例因栓塞性腦中風引起失語症的病人來探討國人失語症的型式與年齡和性別的關係，並與國外學者的研究作比較，以作爲失語症在診斷及治療上的參考。

材料和方法

台大醫院復健科在1980年10月至1984年12月間共收集75例因栓塞性腦中風而引起失語症的病人，其中有51例男性和24例女性，年齡在38歲到85歲之間，這些病人在臨床

上都是第一次發病，且都慣用右手，每位病人都經過腦部電腦斷層掃描（computerized tomography）檢查證實爲左腦半球的梗塞性病變；對於失語症的語言評估測驗則採用目前被廣泛使用的波士頓失語症檢查法（Boston Diagnostic Aphasia Examination）[8]，以句調變化（melodic line）、語詞長度（phrase length）、構音的靈敏度（articulatory agility）、文法結構（grammar）、口語中的語誤（paraphasia）、口語重覆能力（repetition）、命名能力（naming）及聽覺理解力（auditory comprehension）等作分項評分核量，檢查結果有17例Broca失語症，8例Wernicke失語症，9例名稱性失語症（nominal aphasia），5例傳導性失語症（conduction aphasia），6例經皮質層感覺性失語症（transcortical sensory aphasia）和30例全失性失語症（global aphasia）。

各類失語症的平均年齡，男女兩組病人的平均年齡及男女兩組病人中各類失語症的平均年齡，皆以Student's t-test作比較，而男女性別的差異與失語症型式之間以General chi-square test分析作比較。

結　果

75例失語症病人的平均年齡及男女兩組失語症病人平均年齡的分佈列於表1，各類失語症的平均年齡加減標準誤（standard error）作圖標示如圖1，其中Broca失語症的平均年齡爲54歲，比全失性失語症的平均年齡64.6歲小10.6歲（t test, $p<0.01$），而比經皮質層感覺性失語症的平均年齡61歲小7歲（$p<0.05$），此顯示栓塞性腦中風造成的各類失語症病人中，Broca失語症較易發生於年齡較輕者，而年齡較大者易發生全失性失語症或經皮質層感覺性失語症；至於在性別的比較上，雖男性失語症病人51例比女性24例多，但綜合各類失語症的平均年齡，男性59.8歲與女性61.6歲相比，並無統計上的差異（$p>0.1$），而在各類失語症的分項中，性別與平均年齡亦無差異（$p>0.1$），顯示各類失語症的平均年齡與性別無關。

表2顯示男女兩組病人在各類失語症中所佔的人數，以General chi-square test作分析比較得$x^2=32.44$, $d.f.=5$, $p<0.01$，表示失語症的型式與性別上的差異有明顯相關，亦即男性失語症比女性多。

討　論

本文所探討的75例各類失語症病人，其平均年齡的分佈上顯示確實有明顯差異，其中以Broca失語症較易發生於年齡較輕者，此與Obler[1]、Kertesz[2]、Harasymiw[3]及Eslinger[4]等人的研究結果相近；在失語症病人的平均年齡上，雖然有些學者認爲Wernicke失語症和全失性失語症易發生於年齡較大者，但本研究結果却顯示全失性失語症和經皮質層感覺性失語症發生於年齡較大者，茲比較國外學者的研究與本文的發現列於表3。

對於失語症的型式與平均年齡分佈上的差異，年齡較輕者引起的腦血管障礙偏於前腦部語言運動表達區而造成Broca失語症，而年齡較大者會影響到後腦部語言感覺接受區或深及腦皮質層下較廣泛的區域而造成全失性失語症或經皮質層感覺性失語症；由神經病理學上的觀點來解釋，一方面可能是年齡的增加造成腦血管管壁的病變範圍較廣泛，並會影響近端較大的腦血管而造成較大區域的病變，而且由於年齡的增加會影響腦部血流分佈的改變，造成腦血管末端血流量的減少或後腦區血流循環的減少，而影響到較大範圍的腦皮質層或後腦部語言感受區；另一方面是年齡的增加，在記憶力、思考組合能力及心智狀況的改變，也會造成語言感受功能或是整體語言功能上的障礙，而形成全失性失語症或經皮質層感覺性失語症。

至於男女兩組失語症病人在平均年齡的比

較上，本研究顯示並無差異，此表示失語症病人的平均年齡與性別的差異無關，此結果與1981年Kertesz和Sheppard的研究[9]相近。

而在失語症的發生率和性別上的差異是否有關？雖然過去有些學者認爲並無明顯差別（9,10），但也有多位學者的研究認爲男性發生失語症的機會比女性多，近年來Wada等人[5]和LeMay等人[11]在人腦外型上的研究，發現男性在左腦的額葉蓋（frontal opeculum）和顳葉平面（temporal planum）較女性發達且兩側腦部也較不對稱，而此額葉蓋和顳葉平面則是左腦在語言功能上兩個最重要的控制區，所以性別在語言功能上會有差異上的影響，1980年McGlone等人[7]也認爲男性在左腦半球單側性的傷害造成的語言障礙比女性大，且男性在語言功能的控制上較偏向於依賴左腦半球，他曾以加拿大102例慣用右手而罹患失語症的病人作分析研究，結果發現因左腦半球病變造成的失語症，男性爲女性的3倍[6]。

1980年Kinsbourne[12]研究發現女性在語言功能及認知能力（cognition）上比男性具較大潛力，他認爲在左腦半球表現的語言功能上女性比男性強，1982年Basso等人[13]也發現女性失語症病人在語言表達能力上的恢復比男性快，1985年Pizzamiglio[14]評估91例失語症病人的恢復過程，他發現在全失性失語症病人中，女性在語言聽覺理解力的恢復上比男性明顯，所以同樣在左腦半球的病變中，男性比女性較易造成失語症，且男性在語言功能的適應上比女性差。

本文在失語症的發生率和性別差異的探討上，以台大醫院在1980年至1984年間所統計的栓塞性腦中風住院病人，男性有480例，女性有411例，其中有75例發生失語症，男性佔51例，女性佔24例，在統計比較上，因栓塞性腦中風引起的失語症病人中，男性確實比女性多（chi-square test, $x^2=5.02$, $p<0.05$），而且在此75例病人中，以各類失語症分項作性別上的比較也有明顯差異（表3），此也顯示男性發生失語症的機會比女性多。

本研究的結果與多數國外學者的報告相似，顯示雖然語言文化有東西洋之分，但人類左腦病變後引起的失語症，其平均年齡的分佈及性別上的差異仍極爲相近，這對於引用國外的研究資料在國內失語症的診斷和治療上將有所助益。

誌　謝

本文在失語症病人的語言評估測驗上，承蒙台大醫院復健科語言治療室謝富美、胡美秀和陳聖芸小姐等之協助，謹致謝忱。

Table 1. Age Summary for Aphasic Types.

	All aphasias		Male		Female	
aphasic type	N	Mean(range)	N	Mean	N	Mean
Broca's	17	54.0(38-63)	11	53.6	6	54.7
Wernicke's	8	60.4(45-79)	6	61.0	2	59.0
Nominal	9	58.2(46-73)	4	57.0	5	59.2
Conduction	5	59.8(50-72)	5	59.8	0	--
TCSA*	6	61.0(53-66)	4	61.0	2	61.0
Global	30	64.6(47-85)	21	63.0	9	68.3
Overall	75	60.4(38-85)	51	59.8	24	61.6

* :transcortical sensory aphasia

Table 2: Aphasic Types According to Gender in 75 Stroke Patients

	Broca's	Wernicke's	Nominal	Conduction	TCSA*	Global	Overall
Male	11	6	4	5	4	21	51
Female	6	2	5	0	2	9	24
Overall	17	8	9	5	6	30	75

*:transcortical sensory aphasia

Table 3.Mean Age Distribution of Aphasic Types in Different Laboratories

aphasic type	Obler(1)	Kertesz(2)	Harasymiw(3)		Eslinger(4)	Chang**
	Male		Male	Female	Male+Female	Male+Female
Broca's	52.6(N=61)	54.0(N=9)	55.7(N=87)	55.6(N=93)	44.5(N=11)	54.0(N=17)
Wernicke's	62.8(N=29)	60.9(N=6)	67.3(N=41)	61.8(N=27)	62.1(N=27)	60.4(N=8)
Nominal	55.4(N=28)	64.0(N=21)	64.0(N=26)	61.8(N=24)	—	58.2(N=9)
Conduction	57.7(N=22)	55.6(N=9)	—	—	42.9(N=9)	59.8(N=5)
TCSA*	—	—	—	—	—	61.0(N=6)
Global	56.2(N=27)	53.8(N=11)	60.4(N=40)	65.9(N=20)	58.0(N=17)	64.6(N=30)
Overall	56.1(N=167)	58.7(N=56)	60.2(N=194)	58.8(N=164)	55.3(N=64)	60.4(N=75)

*:transcortical sensory aphasia **:present series

AGE, GENDER AND APHASIC TYPE IN STROKE PATIENTS

CHEIN WEI CHANG, I-NAN LIEN
Department of Physical Medicine and Rehabilitation, National Taiwan University Hospital.

75 patients with different types of aphasia attended to the Department of Physical Medicine and Rehabilitation of National Taiwan University Hospital from Oct. 1980 to Dec. 1984. They were all right handed and each of them suffered from a single clinical episode of cerebral infarction. Their speech function were evaluated according to the performance on the Boston Diagnostic Aphasia Examination.

The relationship among the age, gender and aphasic type was analyzed. Regardless of gender, patients with Broca's aphasia was significantly younger than those with global and transcortical sensory aphasias. Male patient was prevalent in aphasic groups, but mean age of both gender groups was no difference.

The possible explanations may be adduced for our findings; one is related to the cerebrovascular changes of aging. The decrease of cerebral circulation is prominant and disseminated in increasing age. There may be changes in the cerebral blood flow associated with aging, predisposing different brain areas to stroke. The second is possible that changes in cognition, deterioration of memroy and comprehension disturbance may predispose the perception dysfunction of language or advanced language dysfunction like global aphasia in aging group.

The prevalence of male in aphasia is possibly due to the gender difference in cerebral dominance.

Our study for the relationship of age, gender and aphasic type in stroke patients is similar to those reported literatures by foreign researchers with their patients in different language culture.

References:

1. Obler LK, Albert ML, Goodglass H, Benson DF: Aphasia type and aging. Brain Lang 6; 318–322, 1978.
2. Kertesz A, McCabe P: Recovery patterns and prognosis in aphasia. Brain 100; 1–18, 1977.
3. Harasymiw SJ, Halper A: Sex, age and aphasia type. Brain Lang 12; 190–198, 1981.
4. Eslinger PJ, Damasio AR: Age and type of aphasia in patients with stroke. J Neurol Neurosurg Psychiatry 44; 377–381, 1981.
5. Wada JA, Clarke R, Hamm A: Cerebral hemispheric asymmetry in human cortical zones in 100 adults and 100 infant brains. Arch Neurol (Chicago) 32; 239–246, 1975.
6. McGlone J: Sex differences in the cerebral organization of verbal functions in patients with unilateral brain lesions. Brain 100; 775–793, 1977.
7. McGlone J: Sex differences in human brain asymmetry: a critical survey. Behav Brain Sci 3; 215–263, 1980.
8. Goodglass H, Kaplan E: The Assessment of Aphasia and Related Disorders. 2nd ed, Lea & Febiger, Philadelphia, pp. 74–100, 1983.
9. Kertesz A, Sheppard A: The epidemiology of aphasic and cognitive impairment in stroke, age, sex, aphasia type and laterality differences. Brain 104; 117–128, 1981.
10. Micelli G, Caltagirone C, Gainotti G, Masullo C, Silveri MC, Villa G: Influence of age, sex, literacy and pathologic lesion on incidence, severity and type of aphasia. Acta Neurol Scand 64; 370–382, 1981.
11. LeMay M: Sex differences in the human brain morphology. Behav Brain Sci 3; 242, 1980.
12. Kinsbourne M: If sex differences in the brain lateralization exist, they have to be discovered. Behav Brain Sci 3; 241–242, 1980.
13. Basso A, Capitani E, Moraschini S: Sex differences in brain organization in recovery in aphasia. Brain Lang 25; 213–223, 1985.

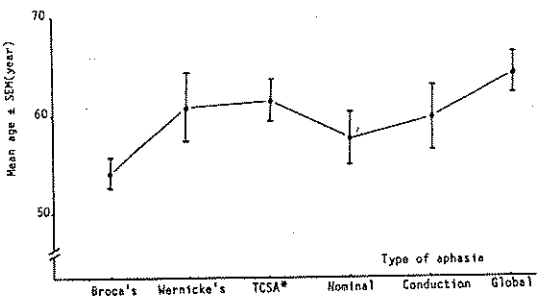

Figure 1. Mean Age ± Standard Error of Mean of Aphasia Groups
*:transcortical sensory aphasia

CONTRASTING CONDITIONS OF REHABILITATION IN ASIA AND THE COMPARATIVE STATUS OF REHABILITATION IN THE REPUBLIC OF CHINA

BY ROBERT J. RONALD, TAO-CHANG HSU
Department of Physical Medicine and Rehabilitation,
Veterans General Hospital, Taipei, Taiwan, R.O.C.

Two vastly opposite conditions in the status of rehabilitation services can be found in S.E. Asia and Pacific nations. Rehab in underdeveloped countries is hampered by poverty, scattered rural populations, inadequate facilities, equipment and personnel, environmental barriers, poor nutrition and hygiene, ignorance and prejudice, low national priorities for rehab. The most developed countries offer many well-funded services, public support for equipment, housing, employment, anti-barrier legislation, active participation of persons with disabilities in national planning, etc. Rehab in Taiwan is somewhere in the middle, far ahead of the undeveloped, but still behind the developed. Though it can boast of many fine facilities, the R.O.C. still has room to improve in the areas of legislation, barrier removal, locally based services, comprehensive vocational rehabilitation, the development and distribution of assistive equipment and the participation and organization of persons with disabilities.
Key works: Rehabilitation, Asia, Taiwan, R.O.C.

Introduction

In the past fifteen years the two authors of this paper have visited rehabilitation centers in seventeen Asian and Pacific nations. Especially since the International Year of Disabled Persons in 1981 there is no country that is not trying to improve rehabilitation services, but there are many with such serious other problems that rehabilitation services are grossly inadequate. The following observations are based on our personal experience and the country reports submitted to the Eighth Rehabilitation International Asia and Pacific Regional Conference in Bombay, Sept. 1986.

Two vastly opposite conditions can be found in Asia. On one hand some poor, still largely undeveloped nations like India, Bangladesh, Indonesia, Thailand, Papua New Guinea, etc. have few and very insufficient rehab services. (In most cases these are also the places with the greatest proportions of persons with disabilities.) At the other extreme a few developed and prosperous countries like Japan, Hong Kong, New Zealand and Australia offer many services available to most of their citizens.

The poor rehab conditions exist because of serious local problems:

1. Large rural populations are beyond the reach of existing facilities.
2. Poverty, lack of resources and trained personnel hinder the increase and spread of services.
3. Environmental, architectural and transportational barriers hamper the mobility and integration of persons with disabilities.
4. Poor hygiene and sanitation, lack of proper nutrition and medication, bad industrial and public safety practices increase the incidence of disabling diseases and injuries.
5. Ignorance, misunderstandings, prejudices, obstructive attitudes create conditions unfavorable for rehabilitation.
6. Issues of national defense, economic growth, political survival, industrial development keep rehabilitation low on the list of national prioroties.

Handicaps are not caused by disabilities, but by social environments that prevent the integration of persons with disabilities into community life. The theme of the 1986 Rehabilitation International Regional Conference in Bombay was "Rehabilitation: Attitudes and Realities." A good summary of the concerns voiced in the conference was given by Dr. David Haxton from the South Central Office of UNICEF.

- As a policy and a moral imperative, we have to accept the logic of Children First.
- The principle of prevention must permeate the thought and action against disability.
- The least expensive strategic option is to empower the family and the community to assume responsibility for prevention wherever possible.
- The community has to be supported by an inter-disciplinary professional group linked to it by para-professionals selected by the community from themselves.
- The main means of empowering parents is information, communication, education and training, which together are the highest

priority in a realistic response to the problem of disability.

This translates into one of the key concepts stressed in the Conference, C.B.R.: Community Based Rehabilitation. With C.B.R. all basic services are made available to all locally while specialized services are provided to all districtly. Great emphasis is put on training people from the local communities to serve as para-professionals, assistants, local managers, and volunteers not just to provide services, but to educate the people, change attitudes, visit homes, locate and identify disabilities, etc.

The following table summarizes the main differences in rehabilitation found between the "have" and the "have not" countries of Southeast Asia and the Pacific.

CONDITIONS IS VERY UNDERDEVELOPED COUNTRIES	CONDITIONS IS VERY DEVELOPED COUNTRIES
1. The actual number of P.W.D.'s (persons with disabilities) is unknown and the majority do not receive rehabilitation.	1. There are regular, standard procedures for early identification and treatment. Official registers of P.W.D.'s are being developed.
2. Rehab facilities are few (though some quite modern) and reach only a part of those who need them.	2. Most local districts including rural areas have the basic rehab services and trained personnel.
3. Locally made wheelchairs and assistive devices are few and not very adaptable for special needs.	3. A wide variety of well-made special equipment and technical devices is available to all.
4. Little legislation has been passed for the welfare of P.W.D.'s and is not well implemented.	4. There is a complex network of laws for rehab services and benifits for the welfare of P.W.D.'S.
5. Little or no public financial or other assistance is available for most P.W.D.'s.	5. Nearly all P.W.D.'s enjoy social security, financial, vocational and other benefits.
6. A centralized rehab agency, if there is one, lacks funding and power. There is no effectice national task force for planning.	6. A well-funded central agency regulates rehab. A special task force from public and private sectors establishes long/short-range policies.
7. Barriers are common everywhere in public and in private and seriously curtail the mobility and integration of P.W.D.'s.	7. Barrier removal is required by law. Building codes mandate accessibility. Accessible public transportation is being rapidly developed.
8. Opportunities for vocational assessment, training and placement are few and unevenly distributed.	8. Vocational rehab services, both public and private, are wide spread. P.W.D.'s can be found working at every level and kind of job.
9. Public awareness of the value and possibilities of rehab is very poor. People's attitudes toward P.W.D.'s are negative and obstructive.	9. In both public and private sectors special attention is being given to housing, worksites, transportation, employment, independent living, sports and recreation for all P.W.D.'s.
10. Most rehab services, especially those of private agencies, are uncoordinated and lack sufficient funding.	10. An interwoven network of public, private and volunteer agencies provides rehab services with governmental coordination and generous financial grants.
11. P.W.D.'s themselves are unorganized and have no voice or participation in rehab planning or the provision of services.	11. Strong well-organized groups of P.W.D.'s have a powerful influence and participate in determining government policies and planning.

The following are a few examples of the advanced rehabilitation provisions in some developed countries of Asia and the Pacific.

Japan. Already by 1971 twenty-three laws had been passed promoting various aspects of rehab and several extensive revisions have recently been carried out. There is a wide variety of vocational rehab facilities throughout the country, specially adapted public housing, advanced development and distribution of technical assistive equipment. Every P.W.D. and his/her family is entitled to a least a basic pension.

Hong Kong. There are several large outstanding comprehensive medical rehab facilities, a vocational assessment center and a large recreational complex for P.W.D.'s. A fleet of over twenty-four Rehabus vans and special vehicles is available to provide subsidized transportation. Over seventy non-government agencies offer a wide range of services with financial support from the government. In fiscal year 1985/1986 the government spent HK$877,000,000 for rehab of which HK$379,000,000 (43%) was given to private agencies. Rehab policies and planning are coordinated by the

Joint Council for the Physically Disabled and Mentally Retarded (Rehab Division: H.K. Council for Social Service). Members of private and volunteer agencies and P.W.D.'s are members of this Council.

New Zealand. The official representative of New Zealand to Rehabilitation International is the Disabled Persons Assembly, Inc. D.P.A. is composed of over 400 national and local rehab organizations and more than 1500 persons with disabilities. It is governed by a thirteen member Executive Committee and has trenty-two regional assemblies. Government Funded, D.P.A. employs a regular full-time staff of nine. Besides it role in national planning and the delivery of services, D.P.A. in the first three years of its existence (it was founded in 1983) has been responsible for the establishment of a national network of government subsidized accessible taxis and a database file of teletext rehabilitation information to be available to the public for viewing on home T.V. screens.

The present status of rehabilitation in the Republic of China

Where does the Republic of China fit in the overall picture of rehabilitation in Asia and the Pacific? It is solidly in the middle improving steadily, miles ahead of the undeveloped countries, but still far behind the most developed. Though Taiwan already has its share of outstanding rehab facilities and many dedicated and highly trained personnel, it still has a ways to go in the areas of special legislation, barrier removal, transportation, educational, training and employment opportunities, public assistance for persons with disabilities, intensive comprehensive medical and vocational rehab services, development and distribution of techical assistive equipment, government coordination and planning and, finally, the organization and participation of P.W.D.'s themselves.

The progress made in recent years is significant and the prognosis for rehabilitation's future in the R.O.C. is bright, but no one should rest or be satisfied until every person with disability in every part of the country receives 100% of all the services needed for the full development and realization of all his/her abilities, interests and aspirations. Rajiv Ggandhi once said, "No man is free, until every man is free." Similarly with respect to the state of rehabilitation in the R.O.C., we say, "Every man is handicapped, until no man is handicapped." Then and only then will the task of rehabilitation be complete.

References:

1. Haxton D.P.: "Towards A Responsible Society" in Proceedings of the Eighth Regional Conference of Rehabilitation International (Asia and Pacific), Bombay, 1986. In press.
2. For the national reports of each participating country about local rehabilitation see the Proceedings of the Eighth Regional Conference, Bombay, 1986; Seventh Regional Conference, Kuala Lumour, 1983; Sixth Regional Conference, Seoul, 1979; Fifth Regional Conference, Singapore, 1975; Fourth Regional Conference, Tokyo, 1971. These publications are all available through Rehabilitation International, New York.

亞太地區與國內復健發展之異同

榮民總醫院復健醫學部 劉建仁 徐道昌

亞太地區的國家復健發展情況有兩種顯着的差異。未開發國家因爲貧窮，人口散佈於鄉村地區，無法配合之設備與設施、人力與環境之阻礙、營養不良和衞生條件的不理想、社會的歧視與偏見構成了復健發展的障礙。大部份已開發國家却投資巨大的財力與人力於復健之設備、建築、就業與法律保障等方面，而且有衆多殘障人員主動參與此項全國性之計劃。目前，國內在復健發展情形正好居於兩者之間，雖然擁有許多值得誇耀的設備，但仍有多處有待改進，如法令規條之修正，人與物等各方面障礙之排除，設立地方性的服務機構，多樣性的職業復健服務，輔助器材的發展與推廣，成立殘障人員組織並鼓勵殘障人員參加，都是未來復健發展的方向。