

Common Developmental Disabilities in Young Children

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ABSTRACT

Developmental disabilities in young children are common, and the prevalence is estimated as high as 0.1-1.75% in the children population for each disabilities. With increasing awareness and health expectation, more children with Developmental disabilities are presenting to health care professionals, and at earlier age. Literatures also suggested the importance of early intervention programme in determining the outcome of this group of children. Therefore, it is vital for health professionals who have direct contact with young children are competent in detecting children with possible Developmental disabilities, and have the basic knowledge about some of the common disorders in order to discuss the issues with the parents. It is also important to work with the various resources available in the local community, such as non-governmental organisations for children with special needs, schools offering special education programmes and inclusive classes, and the allied health who provide cares to this group of young children and their family. A lot of information are also available online, and may be offered to help parents gaining more understanding regarding these Developmental disabilities.

INTRODUCTION

Developmental disability occurs when a child does not acquire normal developmental skills expected for their chronological age. It affects children ability to learn, behave and socialize. With increasing awareness and health expectation, puzzled parents who are distressed by their young child's behavior and/or concern on their child's developmental ability, may turn to their doctor and nurses for help at any time to unravel such issues. For doctors and nurses, this is a task which can require additional skills and resources [1]. Literatures also suggested the importance of early intervention programme in offering parental support, fostering parent/child relationships and diminishing anxiety for children with developmental disabilities [2].

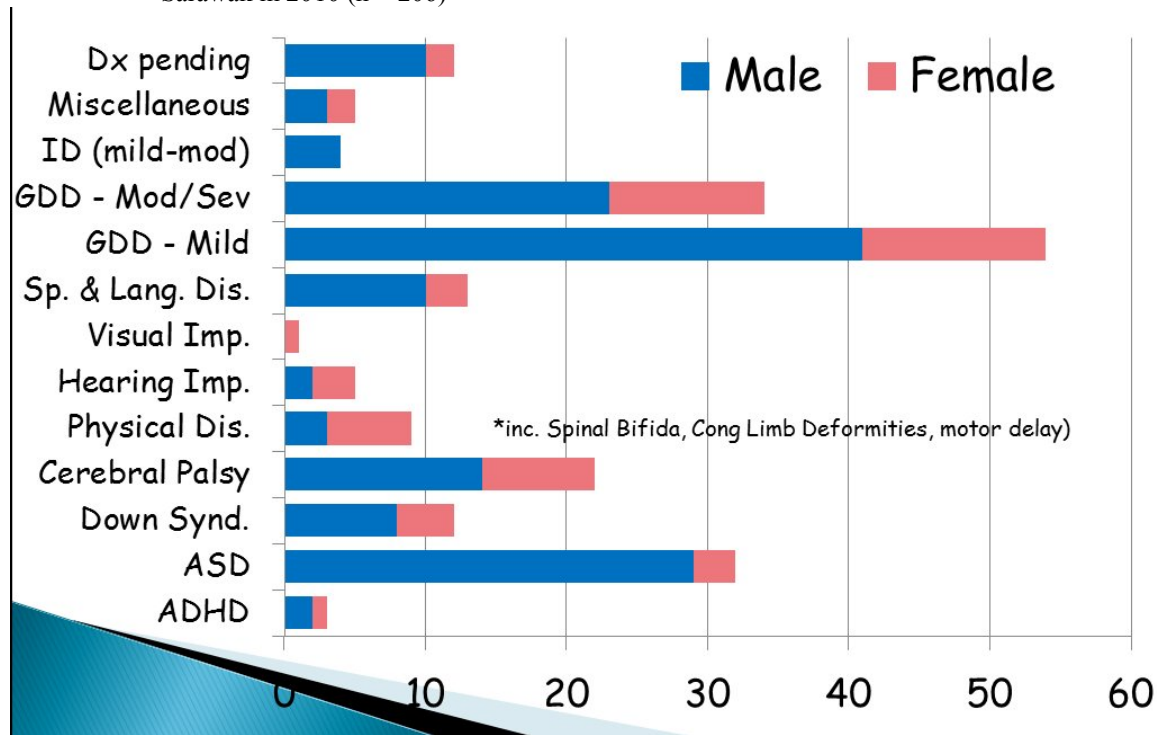
Therefore, it is vital for health professionals who have direct contact with young children are competent in detecting children with possible Developmental disabilities, and have basic knowledge about some of these common disabilities in order to discuss the issues with the

parents. However, often the behavior and developmental ability needs to be understood as a variation of normal – for example, temper tantrums in 2–3 year olds or inability to write the “ABC” in 3 years old. It is essential to know what is normal. Box 1 provides a helpful list of key reassuring features of normal development in young children [3].

In developed country, prevalence of various developmental disabilities in children has been quoted as between 0.1% to 17.5% for each and every disability. The rate of autistic spectrum disorders (ASD) was higher than reported 15 years ago, and now it is estimated at 0.59% [4]. Attention Deficit Hyperactive Disorder (ADHD) is a worldwide phenomenon and researchers believe the worldwide-pooled prevalence is 5.29% [5]. The prevalence of expressive language delays range from 13.5% (aged between 18-23 month) to 17.5% (aged between 30-36 months) [6]. Rates of congenital severe to profound bilateral sensorineural hearing loss have been reported to be 1 to 2 per 1000 live births, not inclusive of mild through to moderate loss, unilateral and acquire severe loss [7]. One population-based study indicated that 12.5% of the children had significant visual disorders, including strabismus, anisometropia or ametropia and organic defects [8]. The prevalence of global developmental delay (GDD) is estimated between 1 to 3% of children under the age of 5 years [9]. The statistical prevalence of intellectual disability (ID) is approximately 2 – 3%, although the actual prevalence may be closer to 1% [10]. In developed countries, the prevalence of cerebral palsy remains at 1.5 to 2.5 per 1000, and has remained essentially unchanged for a number of decades [11].

Chart 1 summarised the diagnoses among those under-6 children presented to Lau King Howe Memorial Children Clinic, a community based clinic who see children with developmental and behavioural problems from Sibü and the nearby regions. Mild GDD and Moderate-Severe GDD, as well as ASD were the commonest diagnosis made. The other less common diagnosis included cerebral palsy, speech and language disorder, and Down Syndrome. There were more boys than girls with developmental disabilities (female: male ratio = 1:2.6) [Chart 1].

Chart 1 Diagnoses made among under-6 children seen in Lau King Howe Memorial Children Clinic, Sibulau, Sarawak in 2010 (n = 206)



ID = intellectual disability, GDD = global developmental delay, Sp. & Lang. Dis. = speech and language disorder, Imp. = impairment, Dis. = disability, Synd. = syndrome, ASD = autistic spectrum disorder, ADHD = attention deficit hyperactive disorder

Pathways to diagnosis

Common presenting complaints in under-6 children were speech and/or features of other delay, hyperactivity, and poor progress in learning at kindergarten, and sometimes “odd” behavior, bowel/bladder training problems as well as sleep problem. Assessment of children with developmental concern requires a detailed history with special attention on developmental history and focused physical examination [1]. In the history, asking for pre-, peri- and postnatal events is usually a good start. This is followed by enquiring for the child’s general health and medical history, paying attention to possible seizures and medications used

(include traditional and complementary medicines). Developmental history forms the basis of assessment. Indicators of possible developmental difficulties are summarized in Box 2 [3]. Although developmental disability may be present from birth, it often does not become evident until a child is challenged with more complex social and cognitive tasks. Those with more severe developmental disabilities, gross physical disabilities and dysmorphic features normally would present earlier (Table 2), whereas behavioural concerns such as ADHD and ASD may present rather late (Table 2).

Box 1 Reassuring signs of developmental progress (by Parry TS, 1998 [3])

Fine motor achievements

- Stacking three or four blocks by 18 months
- Completing simple form boards by 2 years
- Threading beads by 3 years
- Cutting a piece of paper by 3½ years
- Copying a geometric shapes by 4 years
- Tying shoelaces by 5 years
- Printing legibly by 6 years

Speech and language achievements

- Speaking single words by 12 months
- Making word combinations by 2 years

Gross motor achievements

- Walking by 10-14 months
- Climbing by 2 years
- Throwing and kicking a ball by 2½ years
- Pedaling a tricycle by 3 years
- Hopping by 4 years
- Skipping by 6 years

Social achievements

- Dressing by 2 years
- Self-feeding using cutlery by 3 years

Making clear, simple sentences and being interested in books and stories by 3 years
 Making conversation clear to others by 3-4 years
 Reading by 5 to 6 years
 Being toilet-trained by 3 years
 Playing cooperatively in group by 3½ years
 Playing team games by 7 years

Box 2 Selected features suggesting the possibility of developmental difficulties (by Parry TS, 1998 [3])

	Birth to 3 years	3-5 years	5-8 years
Gross motor skills	Bottom shuffling Delayed walking Not climbing or fear of climbing	Delayed or awkward running Not pedalling a tricycle Bumping into objects Excessive falling Not hopping	Not skipping (after 6 years) Inability to throw, catch or kick a ball Inability to ride a bicycle Tripping over or falling Not being picked for team activities
Fine motor skills	Delayed pincer grip (after 10 months) Not stacking blocks Avoiding form boards and constructional toys Avoiding pencil tasks (after 2 years)	Difficulties with cutting or threading Avoiding puzzles and constructional toys Difficulties with dressing and buttons Finger feeding rather than using utensils	Avoiding drawing or immature drawing Inability to colour in shapes Inability to do up shoelaces Messy or illegible handwriting Low output of written work (in terms of both quantity and quality)
Speech and language skills	Absence of single words (by 18 months) No interest in books Reduced imaginative play (after 2 years)	Not using developed simple sentences (by 2½ years) Speech unclear to strangers Use of gestures or mime more than words (by 3½ years)	Unclear or limited sentences Speech unclear to family No interest in books or stories Delay in reading and spelling
Behaviour and social skills	Unsettled or sleeping poorly Irritability Excessive tantrums (after 2 years)	Unsettled sleep Persistent tantrums Inability to play with peers Inability to self-dress and unawareness of toileting skills	Difficulty making friends Emotional lability Delayed dressing and feeding skills Reluctance or refusal to attend school

Table 1 Mean age at presentation for developmental disabilities in under-6 children presented to Lau King Howe Memorial Children Clinic, Sibul, Sarawak

Diagnosis	n	Mean age ± SD (years)
Attention Deficit Hyperactive Disorder (ADHD)	3	4.86 ± 0.95
Autistic Spectrum Disorder (ASD)	32	3.36 ± 1.09
Down Syndrome	12	1.15 ± 1.75
Cerebral Palsy	22	2.40 ± 1.78
Physical Disability*	9	1.74 ± 1.32
Hearing Impairment	5	2.60 ± 1.05
Visual Impairment	1	1.59
Speech and Language Disorder	13	3.24 ± 1.43
Global Developmental Delay – Mild	54	2.75 ± 1.24
Global Developmental Delay – Moderate / Severe	34	2.11 ± 1.35
Intellectual Disability (Mild and Moderate)	4	5.57 ± 0.32
Miscellaneous	5	3.87 ± 2.13
Diagnosis Pending	12	2.56 ± 1.75

*include spinal bifida, muscular dystrophy, and congenital limb malformation

The relationship of the parents (single, separated, de facto or married), the family size, the family's socioeconomic circumstances, and the parents' level of education need to be enquired carefully and in a sensitive manner. Who are the main caregivers (are the parents living with the

child, or away working in other part of the country / world), and their parenting style will help with the understanding of the family dynamics. Often developmental and behavioral problems run in the family, it is therefore important to gather information in this aspect (besides consanguinity).

Other histories that shall be enquired include the social history and patterns of sleep, diet and bowel motion.

Physical and neurological examination in children with developmental disabilities are often normal, but must always be carried out to exclude other possible explanations for a child's behavior problems. It is important to check the vision for those in preschool. If the clinic detects any concern, always refer for formal testing by the optometrist. In children with language delay, hearing competency needs to be assessed formally by audiologist. Distraction test is not sensitive and often misses the milder form of hearing impairment. In addition, physical examination is not complete without observation of appearance and behaviours. Observation of appearances includes looking out for dysmorphic features and neurocutaneous signs, which may point to either a syndrome and/or a chromosomal anomaly (e.g., neurofibromatosis, fragile X syndrome, fetal alcohol syndrome, and Turner syndrome, tuberous sclerosis). Growth pattern such as velocity of head circumference – be it microcephaly or macrocephaly, is important in suggesting the cause and extent of developmental disabilities such as Rett Syndrome or ASD / hydrocephalus.

The use of preschool childhood behavioural checklist is useful in helping the clinician to gather information in children with developmental and behavioural difficulties [12]. Sometimes, formal developmental assessment tool such as Griffiths Mental Development Scales – Extended Revised (GMDS-ER), a standardized assessment tool is necessary for measuring development trends and functional mental growth in young children [13].

Speech and Language Delay

This is one of the most common developmental presenting complaints in young children. Hearing loss is by far the most important cause of language and speech delay to be excluded [7]. Other causes include cognitive impairment (such as ID, Down Syndrome), autistic spectrum disorder, neurological damage (e.g. brain infection / injury or cerebral palsy), psychological disorders (e.g. child

abuse, neglect or lacking of environmental stimulation), anatomical (e.g cleft lip and/or palate), and ADHD. Other less common causes of language and speech disorders include hydrocephalus (including traumatic brain injury), Landau-Kleffner Seizure (abrupt disruption of language functioning in child with normal language development), craniofacial abnormality (e.g. Pierre Robin, Treacher Collins, Klipper-Feil, Crouzon, Osteogenesis imperfecta), Williams syndrome, and Turner Syndrome.

Hearing Loss and Blindness

The severity of hearing loss varies widely, ranging from very severe and permanent from birth, to temporary mild or moderate because of an ear infection. It is associated with a number of developmental problems, especially in the area of language and speech. Box 3 listed the children at risk of hearing loss [14]. In conductive hearing loss, ear infections with fluid in the inner ear compromise the hearing. It is therefore vital to ensure all acute ear infection is treated adequately, and recheck several weeks after to make sure it has resolved completely. In some conditions, e.g. Down syndrome and Fragile X syndrome, ear infections are commoner. In sensorineural hearing loss, it is due to abnormal functioning of the inner ear or that part of the central nervous system in the brain connected with hearing and interpretation of sound. It is usually present from birth (congenital / genetic), and it may also occur after birth (after meningitis, injury or the effects of certain drugs, extreme prematurity, severe jaundice).

By itself, the prevalence of blindness and severe visual impairment is probably not high if excluding the other more common conditions such as strabismus, anisometropia or ametropia [8]. However, 43% of children with visual impairment were found to have more global developmental or learning disabilities; and additional medical problems were present in 79% [15].

Box 3 Risk indicators for hearing loss in children (Year 2000 Statement of the Joint Committee on Infant Hearing) [14]

1. Parental or caregiver concern regarding hearing, speech, language, and/or developmental delay
2. Family history of persistent chronic hearing impairment
3. Stigmata or other findings associated with a syndrome that is known to include a sensorineural or conductive hearing loss or eustachian tube dysfunction
4. Postnatal infections associated with sensorineural hearing loss, including bacterial meningitis
5. In utero infections, such as cytomegalovirus, herpes, rubella, syphilis, and toxoplasmosis
6. Neonatal indicators, specifically hyperbilirubinemia at a serum level that requires exchange transfusion, persistent pulmonary hypertension of the newborn associated with mechanical ventilation, and conditions that required the use of extracorporeal membrane oxygenation.

7. Syndromes that are associated with progressive hearing loss, such as neurofibromatosis, osteopetrosis, and Usher's syndrome.
8. Neurodegenerative disorders, such as Hunter syndrome, or sensory motor neuropathies, such as Friedreich's ataxia and Charcot-Marie-Tooth syndrome
9. Head trauma.
10. Recurrent or persistent otitis media with effusion.

Autistic Spectrum Disorder(ASD)

This is a severe Developmental disability that affects the verbal and non-verbal communication as well as social interactions and play / routines. It has major and often devastating effect on parents and the family. It is also called Pervasive Developmental disability (PDD), and includes other names such as Asperger Syndrome and autism. It is the quality and degree of impairment which determines whether a child has autism. Box 4 provides the criteria for classical autism based on DSM-IV-TR criteria [16]. It is not a single entity, but a wide variation of clinical pictures. Research shows that ASD probably has biological cause resulting in abnormal function. It is more common

in families with another child with autism (a sibling of an autistic child has a 2% - 3% chance of having autism) [17]. There are about four times more common in boys than girls [4] as illustrated in Chart 1 also. Children with ASD have much comorbidity, which includes ID (29.8%), epilepsy (20-30%), ADHD [4]. Sometimes it can be difficult to distinguish ASD from severe language problems and are socially withdrawn as a consequence. Autism can also be confused with intellectual disability and hearing loss at times. Therefore it is also important to check the hearing in children who are thought to have features suggestive of ASD.

Box 4 Diagnostic criteria for Autism Disorder as per DSM-IV-TR [14]:

- A. A total of 6 or more items from 1, 2 and 3 with at least two from 1 and one each from 2 and 3
- B. Delays or abnormal functioning in at least one of the following areas with onset prior to age 3: social interaction; language as used in social communication; or symbolic or imaginative play.
- C. The disturbance is not better accounted for by Rett Disorder or Childhood Disintegrative Disorder.
 1. Qualitative impairment in social interaction, as manifested by at least two of the following:
 - a) Marked impairment the use of multiple nonverbal behaviour such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
 - b) Failure to develop peer relationships appropriate to level
 - c) A lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g. by lack of showing, bringing or pointing out objects of interest)
 - d) Lack of social/emotional reciprocity
 2. Qualitative impairment in communication, as manifested by at least one of the following:
 - a) Delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)
 - b) In individual with adequate speech, marked impairment in the ability to initiate and sustain conversation with others
 - c) Stereotyped and repetitive use of language or idiosyncratic language
 - d) Lack of varied, spontaneous make-believe play or social imitative play appropriate to development level
 3. Restricted, repetitive and stereotyped patterns of behaviour, interests and activities, as manifested by at least one of the following:
 - a) Encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus.
 - b) Apparently inflexible adherence to specific, non-functional routines or rituals
 - c) Stereotyped and repetitive motor mannerisms (e.g. hand or finger flapping or twisting, or complex whole-body movements)
 - d) Persistent preoccupation with parts of objects

Attention Deficit Hyperactivity Disorder (ADHD)

ADHD is a common condition that has been defined as a pattern of inattention and/or hyperactivity-impulsivity symptoms that persist for

at least 6 months to a degree that is maladaptive and inconsistent with developmental level (Box 5). It impairs social, academic and occupational functions in children and young people. ADHD is not just a bad behaviour. However, we know that

children mature at different rates and have different personalities, temperaments, and energy levels. Depending on their age and developmental stage, a

certain degree of excitability and playfulness are considered normal.

Box 5 Diagnostic criteria for Attention Deficit Hyperactive Disorder as per DSM-IV-TR [14]:

- (A) Either (1) or (2):
 (1) Inattention: Six (or more) symptoms of inattention have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level (e.g., often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities; is often forgetful in daily activities).
 (2) Hyperactivity–impulsivity: Six (or more) symptoms of hyperactivity–impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level (e.g., hyperactivity: often fidgets with hands or feet or squirms in seat; impulsivity: often interrupts or intrudes on others).
- (B) Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years
- (C) Some impairment from the symptoms is present in two or more settings (e.g. at school or at home).
- (D) There must clear evidence of clinically significant impairment in social, academic, or occupational functioning.
- (E) The symptoms do not occur exclusively during the course of a pervasive Developmental disability, schizophrenia, or other psychotic disorder, and are not better accounted for by another mental disorder (e.g. mood disorder, anxiety disorder, dissociative disorder).

It is well recognised that children with ADHD may have additional comorbid conditions (including tic disorder and autism) that also need careful evaluation and management. The proportion of children with ADHD who have comorbid conditions has been given as: specific learning difficulties, about 25%; depression, up to 30%; anxiety, about 20%; conduct disorder, 15% [18]. Some of the children were “treatable”. Children with ADHD responded well to a combination of behavioural management, educational intervention and/or stimulant medicine [19]. When seeing a child with hyperactive behaviours and difficulties with attention, it is important to exclude such conditions are not due to hearing problems, intellectual disability, language delay, anxiety and depression.

Cerebral Palsy

This is a disorder of movement and posture caused by damage to the developing brain. Predominantly the motor areas are affected, leading to disorders of movement and posture, although other aspects of functioning may be affected. Usually symptoms are not noticeable or present at birth; mild cases may not be diagnosed for several years. Sometimes, baby may have problems with feeding because of difficulty incoordinating the muscles to suck, chew or swallow. They may be delay in reaching early developmental milestones (e.g. sitting, standing, walking etc.). In a study that excluded postnatal causes, the relative contribution of prenatal factors was 22%, and that of perinatal factors was 47%,

with the remaining unclassified [20]. Prenatal causes included structural abnormalities or infection (e.g. cytomegalovirus, rubella, etc.) of the developing brains or vascular events (e.g. schizencephaly). Perinatal factors such as periventricular leukomalacia and intraventricular haemorrhage are common in low birth weight babies, and those born premature. Hypoxic ischaemic encephalopathy (perinatal asphyxia) and metabolic disorders (i.e. hypoglycemia and hyperbilirubinaemia) during perinatal time remain common causative factors in areas under-served by health professionals [21]. Events during the first months and years of life may also be responsible - meningitis or encephalitis, severe head injury (e.g. shaken baby syndrome or road traffic accidents), or near drowning. A number of these causes are preventable.

Cerebral palsy is classified according to the anatomical distribution of the dysfunction, type of neurological involvement and function. It can be categorized as Hemiplegia (involvement of one side of the body), Spastic diplegia (involvement of the legs more than the arms), Quadriplegia (all four limbs are involved) or Athetoid (involuntary jerky movements of their muscles, with random turning, twisting and facial grimacing). Severity of cerebral palsy varies greatly - from function essentially normal, to a mild degree of “clumsiness” or difficulty when walking/running; or severely handicapped and total dependence for care. The GMFCS is used to define such functional

status by categorizing children with CP into one of five different levels of function primarily on the basis of skills in sitting and walking (Level I children walks without restriction but limitations in advanced skills only; whereas in Level V, self-mobility is severely limited, even with the use of assistive technology) [22].

Many children with cerebral palsy have other difficulties. ID is more common in the severe spastic quadriplegia, but this is not always true. Some children with severe form of cerebral palsy can have normal intelligence (a fact not always easy to appreciate, degree of the motor impairment may interfere with clear speech or being able to perform pencil & paper tasks). Other associated features include epilepsy, vision/hearing problems, and speech & language difficulties. Cerebral palsy affects the children's lifestyle and effect on self-image and self-esteem. This can cause considerable frustration and some will have emotional problems such as depression.

Global Developmental Delay (GDD)

GDD is a subset of developmental disabilities defined as significant delay in two or more developmental domains (comparing to chronological peers) on age appropriate, standardized norm referenced testing such as The GMDS- ER (0 - 8 years) [13]. These areas include gross motor, fine motor, speech/language, cognition, social/personal and activities of daily living. However, the outcome of these diagnostic assessments may be affected by other conditions such as cerebral palsy, sensory impairments, anxiety, ASD, severe neglect or environmental deprivation. A global developmental delay is therefore not always predictive of an intellectual disability [10].

On the other hand, GDD is only a description of childhood developmental conditions, and it requires further assessment and investigation [1]. The assessment and investigation shall at least consist of formal hearing and vision screening, and one may consider blood test such as FBC, Iron, Lead, CK, Thyroid function tests looking for various conditions, if clinically indicated. Sometimes, neuroimaging (either a CT or MRI) may be

indicated if there are neurological findings. Inborn errors of metabolism screen and/or chromosome/genetic tests shall be considered in those with neurocutaneous signs and/or dysmorphic features at risk cases. Nevertheless, estimates of the etiological yield in children with global developmental delay are highly variable (10% to 81%) [9]. Other non-organic causes of GDD include severe epilepsy, child abuse (physical, emotional, neglect, sexual), post natal meningo-encephalitis and head injury [10]. In developing countries, perinatal/neonatal causes (especially perinatal asphyxia) predominate as the cause of GDD or intellectual disability [21].

Intellectual disability (ID)

This is a condition with limited cognitive potential or limited intelligence. Affected children have a reduced capacity for learning, problem solving, and sometimes for other daily functioning, depending on the severity of their disabilities. They also face difficulty in learning - formal and informal level; but many will have normal motor skills, so that walking and other motor activities may be normal or delayed only marginally. More abstract areas of cognition are affected most, e.g. reasoning, problem solving, and the use of language. Box 6 provides the criteria for diagnosis of ID [16]. There are many causes to ID, yet often the cause in an individual child cannot be determined. More severe cases and those with a recognisable syndrome or condition may be picked up at birth or shortly after; many mild ID are not recognised until later. The 3 identifiable commonest causes of ID are foetal alcohol syndrome, Fragile X syndrome and Down Syndrome [10]. However, perinatal asphyxia and brain infections to the developing brain were the common causes of ID in developing countries [21]. Sometimes ID, especially at the milder end of the spectrum, is caused by lack of environmental stimulation - does not have the opportunity to learn from their environment - may be associated with other manifestations of neglect [10].

Box 6 Diagnostic criteria for Intellectual Disability as per DSM-IV-TR [14]:

- A. Significantly sub average intellectual functioning: an IQ of approximately 70 or below on an individually administered IQ test.
- B. Concurrent deficits or impairment in present adaptive functioning (i.e. the person's effectiveness in meeting the standards expected for his or her age by his or her cultural group) in at least two of the following areas: communication, self-care, home living, social/interpersonal skills, use of community resources, self-direction, functional academic skills, work, leisure, health, and safety.
- C. The onset is before age 18 years.

Down Syndrome (Trisomy 21)

This is a genetic disorder affecting approximately

one in 800 children [10]. The likelihood of a child being born with Down syndrome increases with the

mother's age. Children with Down syndrome have characteristic facial features (widely separated, slanted eyes, a flat nasal bridge, and a large protruding tongue, single palmar creases, a flattened occiput, short stubby hands). Affected children also have increased risk of congenital heart defects, hypothyroidism, bowel problems (Hirschsprung Disease, duodenal atresia). They are more prone to upper respiratory tract and ear infections, hearing loss, vision / dentition problems, and some risk of atlanto-axial instability. Children with Down Syndrome usually have delayed developmental milestones and difficulty in achieving the same skills as other children (some degree of intellectual disability, but variable in severity) [10]. People with Down syndrome are generally warm and affectionate, both as children and as adults, and can become productive members of society.

Local Resources

Diagnosing and assessing children with developmental disabilities are challenging [1]. However, finding local resources to help the children with Developmental disabilities and their families are harder. Other than treatments and therapy sessions provided by allied health, children with developmental disabilities often required early intervention program that were intensive and comprehensive. In many parts of Malaysia, the health expertise and therapists are available only in tertiary hospitals and the services may not reach the community where the children and families are located. Many non-governmental organizations and community-based rehabilitation centers have been established for these purposes. It is important and often more cost-effective and rewarding for health

professionals to work with these various resources available in the local community.

Other than weaknesses and disabilities, children with developmental disabilities also have their strengths. It is important for care givers to see these strengths and to encourage the development of these strengths and teaching the child to take pride in their achievements are important in boosting the child's self-esteem/confidence. Social interaction with other children is also vital in promoting the well-being of the children with developmental disabilities. Not only they learn the social interaction skills, other children can learn to accept their peers with atypical development. When children reach school-entry age, it is vital to work with kindergarten / preschool and primary schools to include such children in their school programme, be it special education programmes and/or inclusive classes. Allied health professionals have their role to play in such community partnership programmes as well.

Online and Local Resources

There are many more developmental disabilities that may occur in young children. In helping these children, health staff in the primary public health setting needs references. This can be obtained online nowadays very easily. These online resources may be offered to help parents gaining more understanding regarding these developmental disabilities as well. However, the websites are often not standardized and may not recommend practices that are evidence-based. The author recommends the website listed in Box 7 as an initial startup.

Box 7 Useful websites for families and professionals on developmental disabilities in young children

For Families and Professionals:	Professionals:
<ul style="list-style-type: none"> ▶ http://www.raisingchildren.net.au ▶ http://www.cafamily.org.uk/index.php?section=861 ▶ http://www.cafamily.org.uk/pdfs/about_diagnosis_part9.pdf ▶ http://kidshealth.org/kid/health_problems/index.html#cat135 	<ul style="list-style-type: none"> ▶ http://www.ncbi.nlm.nih.gov/omim (looking up associated features/complications of known diagnoses) ▶ http://www.simulconsult.com/ (neurological and Developmental disabilities)

CONCLUSIONS

There are many young children with developmental disabilities in our society. Young children with developmental disability deserve as much attention and respect as any healthy child. It is important to recognise developmental disability early, and start intervention early to prevent further complication. Each child with developmental disability is unique and requires careful, individual, clinical assessment and thought before any investigations are undertaken. They may be more dependent on

adults because of physical, intellectual, emotional or social limitations - vary greatly between individual and determined by numerous factors, (e.g. the nature and cause of disability, effects it has on the child's mental capacity, child's inherent temperament). The support / encouragement that a child with disability receives from family and others who are closely involved in their life can make all the difference to whether or not they reach their full potential. A positive partnership programme of health and educational

professionals, parents, policy makers, and non-governmental organizations is likely to be more cost effective and rewarding in the works for young children with Developmental disabilities.

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