

A Cross Sectional Descriptive Research on Prevalence of Communication Disorders in Morocco through Speech-Language Therapist Survey

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Abstract

Background: Although communication disorder among the Moroccan population is prevalent, information readily available on this issue is scarce. National statistical information is the official authority that estimates the magnitude of this disorder. With the help of an online survey among the Speech-Language therapist (SLT) in 15 major cities of the kingdom of Morocco, the present study aims at estimating the prevalence of communication disorders among Moroccan population. The study is particularly keen in estimating the factors like age of the affected population and the tools the language therapists are using in addressing the issue. On analyzing the data, the study concludes with the outcome that speech disorders are top in the list of communication disorders and there must be early screening in detecting the issue to treat it effectively. The study also feels the need to apply appropriate tools in addressing the issue that suits the socio-cultural context of Morocco

Material and Methods: A questionnaire based online survey was conducted among a fairly representative sample of Speech-Language therapist (SLT) covering 15 major cities of the kingdom of Morocco.

Results: The questionnaires were completed by 68SLTs. Within the studied sample, 53.8% show oral communication disorders; 16.7% have written communication disorders, 11.2% show disabilities (deafness, autism, mental disability and other Rare Diseases), 10.5% have Ear-Nose-Throat (ENT) disorders, and the rest (7.8%) has neurological disorders. It is estimated that 5.62% of the Moroccan population are affected with speech disorders, 1.74% are unable to communicate in writing, 1.17% are disabled, 1.09% are affected with ENT disorders, and 0.81% have neurological disorders. Thus, in this study, we found that the estimated prevalence of communication disorders were 10.43% for overall the population, among them speech disorder found to be very prominent.

Conclusion: In the selected sample, we found that oral language disorders are more prevalent than the other kinds of communication disorders. And the prevalence of delayed language is higher than the other kinds of oral language disorders.

Keywords: Communication disorders; Oral language disorders; Speech disorders

2. Language disorders.

Introduction

Communication disorders

Gleason defines communication disorder as "any disorder that affects somebody's ability to communicate" [1]. "The delays and disorders can range from simple sound substitution to inability of the individual in understanding or using the native language" [1]. According to DSM-IV-TR, communication disorders are usually diagnosed in the childhood or during adolescence. Communication Disorder affects the academic, communicative, social, and psychological aspects of an individual, influencing the persons' overall lifestyle in a negative way.

There are two types of communication disorders:

1. Speech disorders [2]

Speech disorders

According to U.S. Department of Education's (1992) learning disabilities section, "Speech is the process that shapes in which sound is into meaningful units, such as words. A multitude of factors can interfere the normal development of speech, which cause Problems in producing vocal sounds (articulation), controlling the sounds produced orally, controlling the rate and rhythm of speech (fluency)" [3].

The American Speech-Language-Hearing Association (ASHA; 1982) defined Articulation disorder as: The abnormal production of speech sounds. Voice disorder is defined as the absence or abnormal production of vocal quality, pitch, loudness, resonance, and/or duration. Fluency disorder is defined as the abnormal flow of verbal expression, characterized by impaired rate and rhythm which may be accompanied by struggle behavior" [4].

Language disorders

ASHA (1982) defines three kinds of language disorders specifically, problems related to form, content, and function. Language form refers to the structure of sentence, language content is related to the meaning of words and sentences, and language function is linked to the purpose of communication. Problems can be receptive (related to hearing, listening to, or receiving language) and expressive (related to producing or expressing language). The important characteristics of language disorder are difficulties in learning and using the language, vocabulary, grammar, and with positioning the words and sentences together in a proper manner [5].

Classification of communication disorders

In this survey we have classified communication disorders as:

Oral language

Articulation: inability to pronounce or form a certain phenomenon correctly.

Speech delay Difficulties to select and link the sounds in a syllable or word reducing intelligibility.

Language Delay: acquisition of language and slow development that result in a reduction of lexical, syntactic and pragmatic.

Dysphasia: it is a primary language disorder, affecting expressive and receptive spheres.

Stuttering: is a disruption in the fluency of verbal expression (repetition, blocking extension). Speech disorder characterized by a break in the free flow of sounds, where syllables or words may be repeated or prolonged.

Written language disorders

Dyslexia: persistent disorder in the acquisition of written language and reading mechanism.

Dysorthographia: is a learning disability that results due to visual, hearing or intellectual impairment. It is often associated with dyslexia.

Dysgraphia: writing communication disorder affecting the graphic, gesture and the formal aspect of writing.

Dyscalculia: Learning disability in mathematics, spatial organization, logic, building numbers.

Handicap

Deafness is a medical condition characterized by partial or total loss of the sense of hearing.

Autism: is a pervasive developmental disorder. It is manifested by alterations in the ability to establish social interaction and communication.

Mental impairment: below average intellectual functioning combined with limitations in at least two areas of adaptive functioning: communication, domestic skills, social skills, functional academic skills.

Rare Diseases: are those that affect a small number of people that pose specific problems related to this rarity.

ENT

Voice Rehabilitation Dysphonia: temporary or permanent disorder of vocal function perceived as such by the subject himself or his entourage.

Laryngectomy: partial or total removal of the larynx.

Swallowing: Functional disorders of verbal expression affecting the rhythm of speech in the presence of an interlocutor.

Rehabilitation tubal: functional therapy, soft, dealing with the dysfunction of the Eustachian tubes.

Cleft lip and palatal (or harelip): lack of substance of roof of mouth leading to communication between the nose and mouth

Neurology

Alzheimer: degenerative disease that causes progressive cognitive decline and memory.

Dementia: Syndrome in which memory impairment is observed, reasoning, behavior and the ability to perform daily activities.

Aphasia: disorder of language, often due to a neurological disease (stroke) in brain associated with the areas of language.

Aphasia is loss of the ability to produce or comprehend language.

Head injury: all traumatic impairment of the brain caused by the abrupt end contact (acceleration, deceleration or rotation) between brain tissue and skull, causing destruction of cells or irregularity in the normal functioning of the brain.

Attention disorders: Difficulty concentrating, to be attentive and bring to a conclusion of the complex tasks.

Statistical data

US department of education reported that 10% of preschool children have some problem with communication [4].

Meisels and Fenichel reported that communication disorders occur in approximately 8% of all young children. It may impact a child's social and emotional skills, cognitive skills. Aim of this prospective study is to identify communication disorders among a sample of Moroccan population, (as a representative sample) in order to estimate the magnitude of the communication disorders in the overall population [6].

Materials and Method

Materials

Research design: A cross sectional descriptive research design was used to assess the gravity of the communication disorder in the studied population.

Sampling technique: Stratified sampling method was used, and the sample size calculations was carried out using sample size tables of Epi Info software. Within a population size of 79 Speech-Language Therapists, and a confidence level of (CL=95%), desired total width of confidence interval (W=5); standard deviation of the variable (S=10.4), and a Standard normal deviate for $\alpha=Z\alpha=1.96$, $W/S=0.48$; The Sample size is: $N=4Z\alpha^2S^2/W^2=68$;

The SLTs are distributed geographically as below: (Figure 1 and Table 1, distribution of number of speech language therapists by city in the studied sample).

City	Number of speech-language therapist who answered the survey
Casablanca	20
Benimellal	1
Agadir	2
Alhoceima	1
Kenitra	1
Temara	3
Tanger	6
Sale	3
Rabat	16
Oujda	3
Nador	2
Mohammedia	2
Tetouan	1
Marrakech	4
Fes	3

Table 1: Distribution of number of speech language therapists by city who answered the survey

Tools et method

Structured questionnaires have been used as a research tool to collect data. Enough attention has been taken in including questions related to all communication disorders that may affect oral, written communication abilities, comprehension, understanding and articulation challenges that may result in due to disabilities ENT and neurologic disorders. Data collection was done over 6 month's period from September to March 2015.

Results

Distribution of communication disorders

17.3% of the studied samples had delayed language disorder, and the survey revealed that 9.2% of the studied samples had articulation disorder, 14.1% had speech delay disorder 3.7% had dysphasia, 9.6% had stuttering disorder; with a total of 53.8% out of the studied sample had oral language disorders.

Distributions of different types of communication disorders among the participants in this study are summarized in Table 2.

53.8% of patients have a communication disorders are vocal, 16.7% have written language disorder, 11.2% have disabilities, 10.5% have ENT or Oto-Rhino-Laryngologie disorders, and 7.8%, have neurological disorders.

To have a special focus on patients with speech disorders: 32.1% of them have language delayed disorder, 26.2% have speech delayed disorder, 17.8% have stuttering disorder, 17.1% have articulation disorder, and 6.9% have dysphasia disorder.

Type of communication disorder	Communication disorder	Item	%	Estimated% of population	Total
Oral language	Articulation	% of patients with oral language pathology: Articulation	9.2	0.96	5.62%
	Speech delay	% of patients with oral language pathology: Speech delay	14.1	1.47	
	Language delay	% of patients with oral language pathology: Language Delay	17.3	1.80	
	Dysphasia	% of patients with oral language pathology: Dysphasia	3.7	0.39	
	Stuttering	% of patients with oral language pathology: Stuttering	9.6	1%	
Written language		% of patients with written language (Dyslexia, Dysgraphia, Dysgraphia, Dyscalculia) Pathology	16.7	1.74	1.74%
Disabilities		% of patients with disabilities (deafness, autism, mental disability, Rare Diseases)	11.2	1.17	1.17%
Ear-nose-throat (ENT) disorders		% of patients with type EAR-NOSE-THROAT (ENT) disorders (Voice Rehabilitation, laryngectomy, swallowing, tubal rehabilitation, labio-palatine slit)	10.5	1.09	1.09%

Neurological disorders	% of patients with neurological disorders: Alzheimer's, Dementia, aphasia, cranial trauma, attention disorder	7.8	0.81	0.81%
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Table 2: The prevalence of communication disorders within studied population and the projection for overall population.

Distribution of ages affected by communication disorders

The SLT noted the affected ages for each communication disorders, which are reported in the Tables 3 and 4:

We found in this survey that 42.9% of the persons with speech disorders are 3 years old; 42.9% of the persons in the age group of 7 have writing disorders and 42.9% of people disabled by birth.

Regarding neurological diseases, cranial trauma is affecting all the age groups and the aphasia of children affects them from 3 years old.

Communication disorders	%	Age min (years old)
Speech disorders: articulation problems, language delay, speech delay, dysphasia, stuttering	28.6%	2
	42.9%	3
	28.6%	3,5
Written language disorders: Dyslexia; Dysgraphia; dysgraphia; dyscalculia	42.9%	7
	28.6%	8
	14.3%	3
	14.3%	6
Disabilities: deafness, autism, mental disability, rare diseases	28.6%	4
	42.9%	from birth
	14.3%	2
	14.3%	3
Voice Rehabilitation, swallowing, palatal slot, cleft lip, Tubal rehabilitation, Laryngectomy	14.3%	1
	14.3%	4
	28.6%	from birth
	14.3%	childhood
	14.3%	3
	14.3%	adulthood
Neurological diseases: Alzheimer's, Dementia, aphasia, attention disorder	14.3%	24
	14.3%	50
	14.3%	45
	14.3%	60
	14.3%	adulthood
Neurological diseases: Cranial trauma	14.3%	from birth

Neurological diseases: Aphasia (even childhood)	14.3%	3
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Table 3: The affected minimum age and their percent for each communication disorder

Communication disorders	%	Age max(Years old)
Speech disorders: articulation problems, language delay, speech delay, dysphasia	14.3%	10
	28.6%	8
	28.6%	6
	14.3%	no limit (>60)
Speech disorders : stuttering	14.3%	adulthood
Written language disorders: Dyslexia; Dysgraphia; dysgraphia; dyscalculia	57.1%	no limit (>60)
	14.3%	11
	14.3%	15
Disabilities: deafness, autism, mental disability, rare diseases	14.3%	17
	14.3%	18
	57.1%	no limit (>60)
Voice Rehabilitation, swallowing, palatal slot	14.3%	12
	14.3%	adulthood
	71.4%	no limit (>60)
Neurological diseases: Alzheimer's, Dementia, aphasia, attention disorder, cranial trauma	14.3%	10
	14.3%	10
	14.3%	adulthood
Neurological diseases: Alzheimer's, Dementia, aphasia, attention disorder, cranial trauma	14.3%	55
	71.4%	no limit (>60)
Aphasia (Children)	14.3%	childhood

Table 4: The affected maximum ages and their percent for each communication disorder

We found in this survey, that 28.6% of people with speech disorders are in the age group of 6-8 years old. However the stuttering can reach adulthood part of the age. Dealing with written communication disorders, and disabilities, 57.1% of people are surviving with their disorders.

Concerning voice rehabilitation, swallowing and palatal slot, 71.4% of participants with these disorders have no age limit (more than 60 years old). For the neurological diseases; they are dealing with old ages and children.

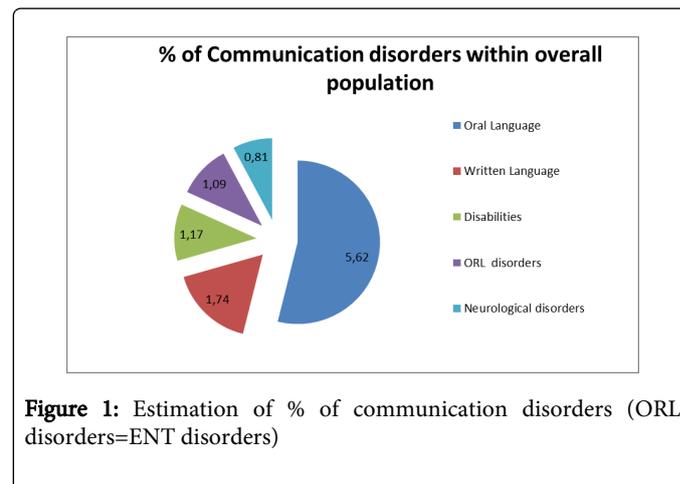
Communication disorders	% (age min)	age min	age max	% (age max)
Speech disorders: articulation problems, language delay, speech delay, dysphasia	12.5%	2	10	12.5%
	12.5%	2	8	12.5%
	12.5%	3	6	12.5%
	12.5%	3.5	6	12.5%
	12.5%	3.5	8	12.5%
Speech disorders : stuttering	12.5%	3	adulthood	12.5%
Written language disorders: Dyslexia; Dysgraphia; dysgraphia; dyscalculia	28.6%	7	no limit	28.6%
	14.3%	8	no limit	14.3%
	14.3%	8	no limit	14.3%
	14.3%	7	11	14.3%
	14.3%	3	15	14.3%
	14.3%	6	17	14.3%
Disabilities: deafness, autism, mental disability, rare diseases	14.3%	4	18	14.3%
	28.6%	from birth	no limit	28.6%
	14.3%	2	12	14.3%
	14.3%	4	no limit	14.3%
	14.3%	3	no limit	14.3%
	14.3%	from birth	adulthood	14.3%
Voice Rehabilitation, swallowing, palatal slot	14.3%	1	no limit	14.3%
	14.3%	4	10	14.3%
	14.3%	from birth	adulthood	14.3%
	14.3%	childhood	no limit	14.3%
Cleft lip	14.3%	from birth	no limit	14.3%
Tubal rehabilitation	14.3%	3	no limit	14.3%
Laryngectomy	14.3%	adulthood	no limit	14.3%
Neurological diseases: Alzheimer's, Dementia, aphasia, attention disorder	12.5%	24	55	12.5%
	12.5%	50	no limit	12.5%
	25.0%	45	no limit	25.0%
	12.5%	60	no limit	12.5%
	12.5%	adulthood	no limit	12.5%
Cranial trauma	12.5%	from birth	no limit	12.5%
Aphasia (even childhood)	12.5%	3	childhood	12.5%

Table5: Minimum and Maximum age for each communication disorders and their respective percent for the studied sample

25% of the speech disorders were detected at 3 years old and persist (no limit of age max), 28.6% of Written language disorders were detected at 7 years and persisted throughout with no age limit, 28.6% of them were Disabled by birth and 25% have Neurological diseases by attaining 45 years old (Table 5).

Projection for the entire population

A close look at the distribution of different types of communication disorders, delay in acquiring oral communication skills remained prevalent.



Discussion

The present study demonstrated that more than half of the studied population had oral communication disorders. The overall prevalence of communication disorders was 10.43%. Aboul-Oyouan performed an epidemiological study of communication disorders in Assiut, Upper Egypt. He found that the overall prevalence of communication disorders was 7.9%. The most common diagnoses were delayed language development, dyslexia, and voice disorders, which are closer to our findings [7]. Our figures for delayed speech disorder (17.3%) are close to those of Sallam screening epidemiologic study in Cairo area, Egypt [8]. Later author found that 17% of the persons screened had delayed speech disorder.

The most recent report (September, 2011) of the national institute of neurological disorders and strokes (NINDS) stated "that 8–10% of American children under 18 years of age have some type of learning disability", and our findings (10.43%) are close to this result [4]. Thus, we can assume that the difficulties in learning to read may lead to academic failure and even dropping out of school for many children, Kail and Fayol pointed out that these failures may cause multiple social and cognitive challenges.

500,000 to 600,000 persons in France have stuttering disorder (1% of the population) which is closer to our finding. As SLT is a recent and yet emerging profession in Morocco, tools used in the diagnosis of communication disorders remain far apart from the prescribed standards. We found in this survey, that the diagnostic tools of some do not serve others, and the used tools are countless seen the difference between all these pathologies. According to surveyed SLT, the batteries and tests are not adapted to the Moroccan sociocultural context. There are a lot of scales and batteries and tests and even software that can be helpful; EVA, VOCALAB, and ECVO are quoted,

compared to the scales GRBAS, VHI. All these tests are not suitable for Moroccan population; personal work is done to try to make a recalibration for each patient. We use different tests depending on the disorder that we want to evaluate. There are specific tests for disorders of written language/other for spoken language disorders:

BELO ODEDYS ELO ANALEC ORLEC BELEC. The tests calibrated like ELO or BOSTON.

Conclusion

It was estimated that 10.43% of the overall population has some type of communication disorders. We estimated that speech disorders were found to be more prevalent among communication disorders, occupying 5.62%. Within this category, we found delay in picking up the language (with 1.8%) is more prevalent than the other kinds of communication disorders. Given these findings the screening of communication disorders is important at early age, especially to screen delayed speech disorder, which is a prevalent communication disorder. It is essential to improve the profile of speech therapist by adapting right tools that suits the Moroccan socio-cultural context.

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