

# Visual Impairments: Cognitive, and Emotional Implications. Legal and Functional Medical Aspects

Letteria Tomasello <sup>1,2\*</sup>, Miriana Ranno <sup>2</sup> and Claudia Pitrone <sup>3</sup>

<sup>1</sup>Department of Clinical and Experimental Medicine, University of Messina, 98122 Messina, Italy.

<sup>2</sup>Faculty of Medicine and Dentistry, Sapienza University of Rome, 00185 Rome, Italy.

<sup>3</sup>Department of Biomedical and Dental Sciences, Morphological and Functional Images, 98122 Messina, Italy.

\***Corresponding Author:** Letteria Tomasello, Department of Clinical and Experimental Medicine, University of Messina, 98122 Messina, Italy.

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## Abstract:

Visual impairment, has a significant impact in the life of person, especially if this takes over in adulthood, and has an impact on the educational outcome, on career choices and on social life. The purpose of this review is to analyze, the clinical features of visual impairment, with the inevitable emotional and psychological implications. A space will be dedicated to the rights of people with visual impairment and the legislative rules to protect them.

**Keywords:** visual impairment; emotional implication; law

## Introduction

Globally, at least 2.2 billion people have a near or distance vision impairment. One billion or almost half of these cases, vision impairment could have been prevented or has yet to be addressed. One billion people, the main conditions causing distance vision impairment or blindness are cataract (94 million), refractive error (88.4 million), age related macular degeneration (8 million), glaucoma (7.7 million), diabetic retinopathy (3.9 million) [1]. The main condition causing near vision impairment is presbyopia (826 million) [2].

The prevalence of distance vision impairment in low and middle income regions is estimated to be 4 times higher than in high income regions [3]. With regards to near vision, rates of unaddressed near vision impairment are estimated to be greater than 80% in western, eastern and central sub-Saharan Africa, while comparative rates in regions of North America, Australasia, western Europe, and of Asia-Pacific are reported to be lower than 10% [3].

Health care is focusing worldwide, with increasing interest the prevention of diseases affecting the visual system [4] To exploit the results achieved in the last 20 years, in 2020, the World Health Organization (WHO) and the International Agency for the Prevention of Blindness have created the project VISION 2020, The Right to Sight [5]. This program aims to eradicate the preventable causes of blindness. According to this study, 2.2 billion people have a certain degree of visual impairment and half of them have a preventable and curable condition [1].

With disabilities, we refer to the limitations and restrictions to which a person with a visual condition is subject when interacting with the external environment, from a physical but also social point of view [6]

However, what is meant by visual impairment status? The International Classification of Diseases (ICD), drawn up by the WHO, distinguishes vision disorders into two groups: far vision and near vision disorders. The former are sub-classified into four classes according to descending order of severity: blindness, severe, moderate, and mild low vision. Visual acuity of less than 3/60 defines a condition of blindness, while visual acuity values between 3/60 and 6/18 represent severe (range: 3/60–6/60) and moderate (range: 6/60–6/18) low vision, respectively. Finally, mild visual impairment is equivalent to values between 6/18 and 6/12. Therefore, under this classification, values above 6/12 distinguish good visual quality. However, concerning the differentiation of near vision diseases, these are defined by a near visual acuity poorer than N6 (scale and metric notation) or M.08 (scale and metric notation) at 40 cm [7].

Sight is one of the five senses that allows us to observe our surroundings. The low vision condition determine a number of consequences and adjustment enacted by the individual to compensate for the lack of vision, which are effective, but which cannot match the use of sight [8].

To be able to synthetically focus on the main problems of a person with visual impairment, we identify three main aspects: the perceptive aspect, therefore the severity of the visual deficit, the temporal aspect, that is when the impairment of the sight has arisen, and the aspect of total operation, that is the correlation with eventual factors is of health is above all of development [8].

The degree of visual impairment is classified by the ICD11 (International Statistical Classification of Diseases and Related Health Problems) as mild, moderate, severe and blindness; there is a distinction between

blindness and low vision, where the first is the complete lack of sight or the sole perception of light, while the second is an incomplete visual inability that compromises some functions of the visual system [9].

It is necessary first of all, to trace the origins of the deficit, which allow a distinction between congenital blindness and acquired blindness, the first is present from birth while the second comes in later ages [10]. A fundamental role in adapting to a visual disability in the development phase is that of parents, leading educators, who must be able to understand the needs of the child using different communicative sources and also know how to provide as many stimuli as possible so that delays in development are contained [10].

ICD11 defines visual impairment as visual impairment that occurs when an eye condition affects the visual system in one or more functions [9].

The classification of visual impairment takes place through visual acuity and the degree of severity is divided into slight, moderate, severe or near-sightedness or vision impairment [9]. In the clinical field, in addition to visual acuity, there are also other visual functions that are taken into account, such as field of view, contrast sensitivity and color vision [11].

In ICD11, there is a classification of the degree of visual impairment recommended by both the Resolution of the International Council of Ophthalmology (2002) and the Recommendations of the Consultation of the WHO (World Health Organization) on "Development of standards for the characterization of vision loss and visual functioning" (2003) [12]

From a legislative point of view, the Italian State also classifies the different degrees of visual impairment, as reported in Law No. 138 /2001 "Classification and quantification of visual impairment and standards for ocular examinations" [13, 14], which classifies individuals with visual impairment into four categories as reported in Table 1

	Category	Definition
1.	Totally blind	Total loss of vision in both eyes <i>or</i> mere perception of shadow and light or hand motion in both eyes <i>or</i> the better eye <i>or</i> binocular residual perimeter less than 3%.
2.	Partially blind	Residual vision not exceeding 1/20 in both eyes <i>or</i> the better eye, even with correction <i>or</i> residual binocular perimeter less than 10%.
3.	Severe visual impairment	Residual vision not exceeding 1/10 in both eyes <i>or</i> the better eye, even with correction <i>or</i> residual binocular perimeter less than 30%.
4.	Moderate visual impairment	Residual vision not exceeding 2/10 in both eyes <i>or</i> in the better eye, even with a possible correction <i>or</i> residual binocular perimeter less than 50%.
5.	Mild visual impairment	Residual vision not exceeding 3/10 in both eyes <i>or</i> the better eye, even with a possible correction <i>or</i> residual binocular perimeter of less than 60%.

**Table 1:** Italian classification of visual impairments—law no. 138/2001.

As for the numbers, IAPB Italia on the occasion of the World Day of the Vista [15] writes:

The latest estimates on which the World Health Organization is working on vision deficits, not yet published, report the quantity and distribution in different areas of the planet: There are 227 million people in the world with severe low vision and 25 million blind people with untreatable diseases. In Italy the blind are estimated to be about 362 thousand and over a million visually impaired. Eye diseases affect all ages, but their incidence increases considerably after 50 years. The progressive lengthening of the average life span, with the consequent increased frequency of different pathologies- degenerative ocular Logies (such as age-related macular degeneration and glaucoma) and the increasing spread of diabetes with the serious eye complications it entails, have put the visual health of the population at great risk" [12]

Finally, with regard to adult eye diseases, IAPB data inform us that although childhood blindness and low vision occur at a frequency of 0.3 per thousand in industrialised countries and up to 1 per thousand in developing countries, eye diseases in adults cause blindness in the range of 5 to 8 per thousand and low vision with a much higher frequency, closely linked to age (with an incidence of 20% in the population aged over 70). Low vision is then identified as an incomplete visual inability that isand is the result of visual impairment [14].

Visually impaired people are able to perceive and use some visual information but at the same time they have deficiencies in visual function that can vary enormously from person to person [5]. Low vision can make color recognition deficient, especially the intermediate shades between light and dark tones; can create problems in recognizing shapes or establishing distances or can be a problem in recognizing images in a specific area of the visual field [5]. The greatest difficulty with visually impaired children lies in establishing their visual condition, so which

visual functions they possess and are able to exploit; hence a difficult understanding for the observer who must understand it. It is necessary to distinguish congenital blindness from acquired blindness; the first is a vision deficit that is present from birth, while the second is a deficit that arose during childhood or later ages [5].

The WHO reports how impaired vision can create possible delays in children's motor, linguistic, emotional, social and cognitive development [1]. There are various circumstances that determine the degree of psychophysical development of the child with visual impairment; of great importance is the fact that the deficit appears to be congenital or acquired since it is an essential determinant in the understanding of the child's degree of development [3]. If a child loses his sight at a certain age, he will reach the stage of development of the onset of the deficit, which will not happen in a child born without sight. However, there is no evidence that there is a linear relationship between the lack of sight from birth and delays in the child's psychomotor development, but the fact that the visual impairment is severe is an important risk factor for the child to develop [3]. What has been found, however, is the presence of variations in the time of acquisition of some motor stages, as well as of spatial skills and also of cognitive and language development [3]. It is clear that the presence of an environment that is stimulating for the child and the intervention of professionals competent in this field can allow a psychomotor development as balanced as possible.

The deprivation of sight determines the creation of a series of compensatory functions by the child put in place both at the perceptive level but also at the defensive level [3]. The lack of sight from birth seems to stimulate the creation of a mode of knowledge based on the use of residual senses, especially touch [3], which becomes the main channel of exploration but slower and therefore more limited [15]. If the loss of sight occurred in later ages, problems of adaptation may arise and especially at

a psychological level, the loss of sight is experienced as a real loss such that it will be necessary to process and overcome it [3].

The psychophysical development of a child takes place through the achievement of certain phases, called development phases, which allow the achievement of motor and psycho-sensory goals [15]. The sighted child already in the first months of life begins to perceive the space visually observing and following with his eyes the objects, grabbing them, starting to coordinate the movements, in the blind child there will be an inevitable delay in achieving these objectives [15]. Nevertheless, the first motor stages, such as raising the head, crawling, rolling, orienting the head towards sound sources, are acquired by blind children at roughly the same time as sighted children, as these are actions independent of visual function [15].

Nevertheless, actions such as the development of sensory-motor intelligence or coordination are more complex to develop and for this reason the intervention of parents and professionals is essential to help the child achieve these results [15].

As regards social development, it depends in the first place on the ways in which parents are cared for, which therefore play an important role in building the child's future capacity to create relationships with others [16].

Often, unfortunately, an element that characterizes blind or visually impaired children is the presence of fear and dependence on the family, due in reality not to the loss of sight in itself, but as a result of excessive protection of parents, which leads, however, to a loss of opportunities for growth and development for children [16]. The following are identified as the main difficulties that the child encounters in the development of social interactions: the impossibility of learning social skills by observing others, the presence of a reduced number of possibilities of social interaction, the inability to learn some communicative rules, such as who should speak first or to carry on a conversation in a participatory and active manner, and finally the difference in game methods, as the child with visual impairment tends to prefer stereotypical and repetitive activities [10].

**Define disability**

Who decides to approach a study of disability by doing qualitative research, is confronted with the fact that, the concept of "disabled", is not universal; often occur in the literature to find terms such as "invalid", "disabled", or "incapacitated" used inaccurately or as synonyms. For this a clarity of terminology and conceptual, is the starting point of any research: in this study we followed the guidance adopted by ISTAT,

which explicitly refers to the definitions of "impairment", "disability", and "handicap" illustrated in the two documents of the World Health Organization.

The focus of the WHO definition is the sequence of determinations leading from impairment to disability: the "impairment" is the biological damage that a person reports as a result of a disease (congenital or not) or an accident; the "disability" is the ability to carry out the normal activities of daily life as a result of the impairment;" the Handicap" is the social disadvantage resulting from having a disability. In 1980 the World Health Organization published a first document entitled International Classification of Impairments, Disabilities and Handicaps (ICIDH) [17]. In the text the important distinction was made between "impairment" (Impairment), understood as: Loss or abnormality of a structure or a psychological, physiological or anatomical function and the other two terms. These were respectively defined: disability (Disability) as: any limitation or loss (resulting in impairment) of the ability to perform an activity in the manner or extent considered normal for a human being and "handicap" such as "disadvantage resulting from a disability or disability that in a certain subject limits or impedes the fulfilment of the normal role for such a person in relation to age, gender and sociocultural factors [17].

To give an example, according to the definitions that have been specified above, a blind person is a person who suffers from an ocular impairment that causes him or her disabilities in locomotion and involves handicaps, for example, in mobility and employment. The most significant aspect of the first document published by the World Health Organization was that of associating the state of an individual not only with functions and structures of the human body, but also to activities at the individual level or participation in social life. The European Community has a special role to play.

The second WHO document is entitled "International Classification of Functioning, Disability and Health" (ICF) and was approved by the 54th World Health Assembly on 22 May 2001 [4].

According to the ICF: "Persons with visual impairment are generally those with impaired organs and anatomical structures related to vision, or affected by an alteration of functions related to this sense" [18]

It is also important to point out that ICF does not only affect people with disabilities, but all people and therefore has a universal use and value.

With respect to each of the hundreds of classified items, each individual may be associated with one or more qualifiers describing its functioning. For the functions and structures of the body, the qualifier can assume the values shown in the table 2:

0-4%	0	No impairment
5-24%	1	Mild impairment
25-49%	2	Moderate impairment
50-95%	3	Severe impairment
96-100%	4	Total impairment

**Table 2:** Table with impairment values [18]

Becoming disabled in adulthood means getting back in the game and clashing with new ways of relating to the world of work, leisure, love, sexuality. Having a disability that is not congenital, but has taken over in adulthood, means reconstructing an entire existence that needs the help of a multiplicity of special interventions aimed at restoring autonomy in all aspects of daily life. The independence and integration of the disabled not only pass from the protection of the legislator who works through regulatory provisions, but also through the individual to the illness and suffering. Those who have acquired a disability in adulthood generally become aware of their condition following a diagnosis that acts as a watershed between life before and after diagnosis: it is as if through a mysterious spell a normal person with anxieties and fears is transformed

into a disabled [19]. This step can have numerous consequences: it can turn into a real depressive crisis characterized by suffering and refusal of diagnosis, or, if the phase of refusal is overcome, you can begin with the acceptance of disability through resilience and, therefore, normalization. According to Adams and Pearlam [19] there are three types of responses to vision loss: acceptance, rejection, depressive anxiety. Knowing the process of adaptation of the person is fundamental to act as a support to the patient and to have a support in the gradual change of self-image and identity, the new condition, which will require to live with a functional limitation.

Adams and Pearlman (1970) note during the acceptance phase a marked difference between totally blind subjects and those who have suffered a partial loss of vision, in the latter, the psychological picture appears more complex and have a marked depressed mood, anger and hostility, compared to complete blind people, probably because the latter, accept their new transition by adhering to rehabilitation interventions that favor their social adaptation; on the other hand, those who retain a perception of residual light or sight fluctuations (as in the case of patients with glaucoma or diabetic retinopathy) have higher levels of stress and non-acceptance, probably fueled by the fear of completely losing the view [20].

There would be no difference in the process of accepting blindness between those who have become blind in a short time and those whose eyesight has deteriorated over a few years, this is due to the way in which the person approaches the handicap [21].

Fitzgerald [22] in his study of a sample of patients with acquired blindness records depressed mood in 90% of cases, accompanied by depressive symptoms such as insomnia, loss of appetite, social withdrawal, loss of self-esteem, crying, thoughts of suicide, these symptoms were present in 50% of subjects, while anxiety concerned 70% of the sample.

Together with the 2/3 loss of vision of the sample showed a pre-existing symptomatology while in 37% of cases new symptoms and pathologies appeared. After four years, the same sample showed a worsening due to the chronicization of the psychopathological symptomatology; this clearly indicated that the initial crisis had not been resolved.

Only the acceptance of pathology, becomes a solid foundation on which to acquire new patterns of behavior and a good mental, physical and social balance.

Considerable importance is also given to social networks in support of the person suffering from visual impairment, an important role is played by the family that often reacts with hyperprotection, an attitude that strengthens the patient's physical and material dependence on others. Fitzgerald's study [22] confirms how the family's overprotective attitudes can be counterproductive: often the family members who support people with visual impairment, encounter great difficulty in letting even the simplest activities be done, by underestimating the abilities of the cohabiting partner and by replacing him. During rehabilitation, hyperprotection strengthens in the blind or the visually impaired the belief of being powerless and this seriously undermines the ability to make autonomous choices and decisions especially when peer pressure becomes strong [23].

### National Education System

The Framework Law 104/1992 provides that persons with a disability "regardless of their type and degree of disability" attend the main school from the day of child care to the highest possible level of education that the person can achieve with his/her personal abilities. After inclusive education became a general practice in Italy, special elementary schools were closed and therefore all blind and visually impaired children attend primary schools like other children [24].

Law 104/1992 and Law 845/1978 [24,25] provide for the inclusion of people with disabilities in vocational training courses in public and private centres and also ensure that students with disabilities who cannot use traditional learning methods can obtain a qualification also through specific activities which are established within the framework of the activities of the vocational training centre. To this end, the regional authorities shall provide the necessary support material and equipment.

Vocational training centres provide courses for people with disabilities who cannot attend ordinary courses. Students who have attended these courses obtain a certificate of participation valid for registration in the compulsory employment register

### Educational contexts

The Italian legislation provides that the blind and visually impaired who attend primary and secondary school receive adequate school and educational support even at home.

The support measures are set out in Law 104/1992. The school integration of people with disabilities in traditional contexts at all levels of education (primary, secondary, etc.) is ensured by the proposed measures:

- a) coordinated planning of educational, health, social, cultural, recreational and sports services,
- b) availability of technical and teaching material and any other technical material by educational establishments.

In addition to the obligation of local authorities to provide assistance to pupils/students with physical or sensory disabilities for their independence and communication needs, in schools of all levels of education (primary, secondary, etc.) Support activities are carried out by specialised travelling teachers. The Ministry of Education is primarily responsible for creating training and refresher courses for teachers on subjects related to the school integration of pupils/ students with disabilities.

Teachers of pupils/students with disabilities shall indicate in a specific document for the assessment of the competences of pupils/students to whom special educational criteria have been applied. In compulsory education, examinations are based on the curriculum developed for each pupil with disabilities. In secondary schools, students with disabilities can take an examination equivalent to that of non-disabled students;

In addition, disabled students receive additional time during written examinations or examinations involving the use of drawings and may be assisted by staff for their independence and communication needs.

Students with disabilities take their exams with help that they need. Visually impaired students are provided with a Braille transcription of the exam questions/text.

Local authorities are responsible for the funding of the programmes of domiciliary educational support and special complementary activities, i.e. the activities aimed at reducing the effects deriving from visual loss.

### University

Law 17/1999 [26] provides for the provision of specific technical and educational aid to students with disabilities, in some cases through agreements with regional or local authorities, and the provision of specific educational support. Law 17/1999 also provides for individualised measures to enable students with disabilities to take examinations, including the use of technical aids specifically necessary in relation to the type of disability and the possibility of taking examinations in the same way as ordinary examinations, at the request of the specialised tutor.

### Vocational training and lifelong learning

In addition to the provisions for ordinary courses, there are specialized courses for the vocational training of operators of low-vision telephone exchanges, masseurs (both professions are linked to the compulsory Italian work programme) and computer programmers. The Italian legislation also provides for the recognition of the following professional figures legally equivalent to operators of telephone switchboards, masseurs with regard to mandatory working regimes: low-vision telephone operator employed in customer information service - reception; low-vision telephone operator employed in the management and use of databases and low-vision telephone operator employed in telemarketing and medical emergency service. However, so far, these courses have rarely been established for these new professions.

Teaching of compensatory skills made necessary by vision loss

The training of compensatory skills is not dealt with by the educational system as its responsibility lies with the functional rehabilitation schemes.

Subjects (Braille, computer, daily-living skills, mobility, etc.)

Braille, computer, daily living skills, mobility.

Training and certificates for visually impaired teachers (Braille, computer, daily-living skills, mobility, etc.)

Training and certificates for visually impaired students (Braille, computer, daily-living skills, mobility, etc.)

There are no special certificates for visually impaired teachers and students. In the past there were courses, resulting in a specific certificate, for both blind and sighted teachers who wanted to teach blind pupils at primary schools but this qualification does not exist any longer.

Provision of accessible text books and other educational material Provision of the basic documents

Adaptation and transcription of the documents

The laws regulating the above provisions are as follows: Law 104/1992 on the "assistance, social integration and the rights of persons with disabilities", Law 4/2004 "Provisions to enable persons with disabilities to access computer technology tools" and its application contained in the legislative decree of 30 April 2008 concerning the provision of text books and educational computer aids. In addition, the Ministry of Education issued in 2008 a circular letter that set an earlier date for the choice of text books for the following year in classes where there is a visually impaired pupil/student in order to give more time to the agencies in charge of the production of such books in adapted format (Braille, large print, electronic) to perform their task and timely deliver the text books to the pupils/students. The National Talking Book Centre of the Italian Blind and Visually Impaired Union has a similar agreement for the production of textbooks in DAISY format.

The following laws include the various areas of life where people with disabilities must have their rights to care, social integration and access to information technology and therefore apply to all levels of education (primary, secondary, etc.): Law 104/1992 on "assistance, social integration and the rights of people with disabilities", Law 4/2004 "Provisions to allow people with disabilities to access computer tools" [27].

## Conclusion

In Italy, according to the latest estimates of the International Agency for the Prevention of Blindness [28], 362 thousand people suffer from total blindness, while almost one million suffer from severe low-sightedness. These data recall the need for direct intervention by the Welfare State that should break down the barriers that overlap between a dignified lifestyle and ensure the necessary care in case of chronic-degenerative disease. However, in Italy, unfortunately, sociological studies dealing with the health conditions of blind people are very poor and this subject still remains an exclusive of the Anglo-Saxon world [29].

In fact, although in recent years there has been an attempt to increase seminars and conferences, including international, on epidemiology and blindness, These had the simple purpose of implementing health policies aimed at reducing human and social barriers and increasing awareness that the blind population represents the most vulnerable class and excluded from services what emerges from an analysis of the literature is that unfortunately, to date, in Italy there are completely absent research that has analyzed and thematized the theme of social inequalities of health and blindness. Taking better [29], the health conditions of a blind person can be considered as the result of the interconnection between different causal factors such as lifestyle, the relationship with the ecological environment in which they live daily, and, in particular, the relationship

with the social and health care structures to which it refers. In particular, the iteration with these two viable, assumes a fundamental value in contributing to the reproduction of social inequalities of health that are defined as the set "of the objective differences existing between the members of a community or between any set of individuals and their reference groups" [30]. Although the attention of institutions has focused on the prevention of the causes that produce a visual disability, to date more than two million people in the world have visual impairment, most of the causes that lead to blindness can be prevented [1]. More attention should be paid to the psychological and emotional consequences of patients and the related implications on the quality of life [29]. The patient with visual impairment, must be considered as a whole psychophysical aspect, an aspect that to date has been little investigated. total or partial loss of vision inevitably affects present and future plans, as well as a limitation of activities carried out in daily life, with repercussions on quality of life [29] and onset of depressive disorders and anxiety [31,32]. A person feels understood and part of a system that cares about him and his happiness, becoming a more active citizen, spurred to make the most of his abilities.

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