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Management of Vision Wall Chart Development

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Abstract

One the biggest support in the world of health is aspect tool health or instrumentation various profession power health, incl Refractionist Optional. The Snellen Chart is one tool health use for inspection sharp view of the facility service health well at Home Hospital, Clinic, or Optics. The more increase perpetrator entering business realm optically, no offset with availability power expert who has knowledge adequate in the field Refraction Option. This causes still exists found Optics that use the snellen chart which is not in accordance with proper rules and regulations noticed in making alphabet or the symbol to be object inspection sharp vision. Aim this research for apply theory management making good and correct vision wall based snellen fraction includes type letters, sizes size letters, colors letters and arrangement chart vision wall chart. This research uses method experiment quasi with apply action form method learning, and describing enlargement is performed. Population this research is Employees in the National Eye Center Outpatient Hospital environment. Cicendo Bandung eyes, with sample research 40 employees. Instruments used is sheet observation inspection sharp vision. Research results shows 70% yield inspection sharp vision use appropriate vision wall chart with projector Shin-Nippon CP-500, with consider distance inspections carried out, location, lighting room, and the same respondent. Principle theory Easy Snellen fraction applied in making vision wall chart. San Serif is type fonts used in making vision wall chart, magnitude size customize fonts with principle snellen fraction, and color black used in making vision wall chart.

Keywords: *Snellen Chart, Visual Acuity, Vision Wall.*

INTRODUCTION

One sense in this body is very big role for entry means information is sense vision. Eye organs have tools refraction light is called the refractive medium among them is cornea, aqueous humor, lens crystalline, vitreous and retina. Refractory medium it's huge influence in refractive state somebody (Brar VikramS et al., 2020; Daniel Azzam et al., 2021; Tariq Bhatti M., 2020).

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Emmetropia is light refracted by the refractive medium fall down right on the retina whereas ametropia or abnormality refraction is circumstances where shadow firm no formed on the retina but in the front or behind freckles yellow and no located on one sharp point. Abnormalities refraction known in form myopia, hypermetropia, and astigmatism (Ilyas, 2006).

From the WHO survey in 2010, it was estimated that 153 million people in the world experienced it disturbance vision caused because Uncorrected Refractive Error or abnormality no refraction corrected full (myopia, hypermetropia and astigmatism) and 8 million of them experience blindness, 90% of them live in an income-producing country low, lacking attention Public to health eye, incl reluctance for come check her eyes to House sick this is due because ignorance they about how importance eye (InfoDatin, 2014; Mariotti S et al., 2012; Nintyastuti IK et al., 2016; Resnikoff S et al., 2001; World Health Organization, n.d., 2012).

One the biggest support in the world of health is aspect tool health or instrumentation for various profession power health, incl Refractionist Optional. reactionist Optional is power health education graduates based on applicable laws and regulations do inspection eye basic, inspection refraction, establish results check, fix results inspection, preparation and manufacture lens eyeglasses or lens contact. Whereas base procurement tool inspection for Refractionist Optimist, regulated in PERMENKES No. 1424 of 2002 about guidelines organizing optics, where has determined regarding layout room, layout lighting and provision optical device (Maksus, 2016; Menteri Kesehatan, 2008, 2015).

Measurement sharp vision is component urgent in inspection health eyes. Accurate tool needed in measure sharp vision and correct abnormality refraction so that inspection and correction could done more appropriate (Departemen Kesehatan RI, 2009; Srikiran Institute of Ophthalmology, 2013). Snellen chart is tool standard inspection sharp possible vision used in several the place service health.

Screening and correction abnormality refraction in children school globally is costeffective intervention cost. It can performed on those aged 11 to 15 years (Baltussen R et al., 2009), with thereby inspection sharp this vision is very auspicious if rated from factor economy. A number of approach for screening abnormality refraction has been explored During many years from start school teacher (Abubakar S et al., 2001; Limburg H et al., 1999), power health like nurse (Kulp MT, 2009), or use tool independently by yourself (Bekibele CO et al., 2008; Owen CG et al., 2006).

Screening vision could use Snellen E chart and occlusion. Identification this check can performed on children (11-15 years) with disturbance vision. Notes results inspection sharp vision children saved with use record medical for then could scheduled control repeat every one year or two year in accordance need (Faal et al., 2007).

Snellen chart is one tool tree inclined examination could We meet good it's in Optics, Clinic nor Home Pain as a card working table for knowing vision or sharp vision somebody for evaluate is sharp normal vision or need correct with use trial lens on examination refraction (Priatna et al., 2022).

Herman Snellen is a Men Dutch nationality who is a doctor specialist eye or ophthalmologist born on February 19, 1834. His name is very big inside world of health eye because creation his still works productive until currently that is object inspection eye named Snellen chart. Though previously invention object inspection eye more formerly introduced by Heinrich Kuechler (1811-1817) and corrected by doctors eye origin Vienna, Austria, Eduard Jager Von Jaxtthal or more known as Jagger. Jager is initiator card read or reading chart in 1854. In 1862, Snellen became examiner main and common with that he introduced to the world of maha given work optotype (Holladay et al., 1997; Priatna et al., 2022; Watt et al., 2003).

Device is used as a step in improvement for could used in inspection sharp vision. Rule 5x5 as size Snellen letters have tested where at the start creation, object made with box 5x5 to be reference in the description, making this manual is done before done machine printing printing (Rabbets, 2007; Widyawati et al., 2017).

Snellen Chart first consists over 11 lines of letters with alphabet capital. lineup first consists of 1 letter selected capital and font usually are E, N and N. Next line consists on more letters many from before, only just magnitude alphabet Becomes reduced. The amount alphabet in accordance with row level. Snellen did too breakthrough with enter element display and calculation in a manner geometry on the chart. Jack T. Holladay, M.D. facs on month August 1997 peeling finished problem geometric related with optotype display as for element mandatory geometry fulfilled in accordance with draft Snellen geometric (Holladay et al., 1997; Rabbets, 2007).

The more increase perpetrator entering business realm optically, it turns out not yet offset with availability power expert who has knowledge adequate in the field refraction option. This causes still exists some (read: many) optics that use optotype or snellen chart made in a manner perfunctory. Called perfunctory, because of the optotype that made without notice rule or must rule fulfilled in making letters or symbols that become object test as a reference evaluation sharp vision.

Inspection with using this optotype is very relying response from client. examiner usually will request client for mention letters the one by one. Letter details that don't consistent can make alphabet the no looked clear for client. It will the examiner responded with add size front mounted lens eye client. In fact, if the details of the letters consistent, yes so alphabet the will looked clear for client. Case like here 's what can be one reason happening correct excess (overcorrection). The opposite can also happen just happened. Because the details of the letters are not consistent so that there is the giving part corner vision central more of 1′, then client so can guess alphabet the so that

examiner consider size lens provided already enough. It will Becomes reason deficiency correction (under correction) because if only letter details the consistent, yes so client no will could guessed it snellen scattered in Indonesia in part big no adjusted with base existing theory.

In line with plan strategy of the National Eye Center in develop project change Vision Wall that can impact on effort eye health improvement, maintenance vision and prevention to danger possible blindness prevented and rehabilitated, which is one of them is abnormality refraction, and proactively participate contribute in effort promotive and promotive anticipation myopia boom with create, provide, distribute and educate inspection sharp vision independent so researcher motivated for do study about Management Making Vision Wall Chart.

METHOD

The conceptual framework in this study that is management making vision wall chart includes type font, size letters, colors letters, arrangement chart chart, and vision wall chart.

This research includes in study experiment. Study experiment is intended research for knowing there is nope consequence of "something" imposed on the subject investigate. In other words research experiment try researching there is nope connection because consequence (Arikunto et al., 2010).

Experiments used in this research included experiment quasi (quasi experiment) or experiment pseudo, because researcher apply action form method learning. Besides it's also deep study experiment pseudo influencing environment results his research no could controlled (Arikunto et al., 2010).

In study needed explanation or description about the subject used ingredient study regarding with circumstances, facts, variables and incident that took place moment research. So deep this study researchers also use type study descriptive (Puguh Suharsono, 2009; Uma Sekaran, 2006). Aim study descriptive is give information to researcher a history or detailed description of relevant aspects with phenomenon about attention from perspective perso, organization, orientation industry, or other. This research pattern is used for describe enlargement is performed.

Population from this research is employees in the Outpatient National Eye Center Hospital. Cicendo 's eyes in the city of Bandung, and samples study totaling 40 employees.

Research instrument the method used in this study is an observation sheet. Observation is technique data collection carried out through something observation, with accompanied records to circumstances or behavior object target (Abdurrahman Fatoni, 2011). Observation is systematic observation and recording to the symptoms studied (Nana Sudjana, 1989). Observations were carried out by researchers by observing and recording examinations sharp vision respondent.

The flow of this research consists from determination draft vision wall chart, designing design vision wall chart, print vision wall chart, test try vision wall chart on respondents, then socialization and application screening vision wall chart.

Research is done with Obtaining a Home National Eye Center permit Cicendo Bandung Eye Hospital and Agencies related.

RESULTS AND DISCUSSION

Application Theory Deep Snellen Fraction Making Charts Vision Wall

Learning process begins in childhood and affects very accurate visio ability study child. Lots of research show that disturbance vision in children could have significant impact to performance they're at school as well as interaction social and developmental child. Vision Wall is something place in school, where child could do inspection sharp vision in a manner independently, using card Vision Wall.

Card Vision Wall is modification from Snellen card, which is common used for check sharp vision in various place. Because it, this card is expected make it easy screening independent disturbance vision child age school. Card Vision Wall consists of 11 lines of divided letters Becomes two group. If examined child no could see row 1, means sharp his eyesight not enough from 0.1. When child can look at lines 1-7, shows sharp less vision from 0.5. This group is tagged with color red. Color this red shows that examined child need inspection eye more continue at the nearest Health Facility. Group second are lines 8-11, marked with color green. If results inspection fall on one of the row in the group green, that is sharp vision examined child is more from or same with 0.5. This group includes in sharp normal vision, so could suggested do inspection eye routine every 6 months once.

Management Making Chart Vision Wall Flow Chart

Measurement sharp vision influenced by several factor that is distance measurement, size letter, intensity light as well as contrast. Notation Snellen used in this study because easy used and familiar so fast for examiner in interpret results measurement (Valenzo, 2012).

a. Letter Fonts Vision Wall Chart

Snellen (1862) introduced a letter chart for visual acuity measurement, and he designed his optotype so that the main extremity outline was 1/5 letter height wide (Benjamin WJ et al., 2006; Blomquist PH, 2015; Brodie SEMP et al., 2020).

Many of the Sharp of Sight Charts that followed (Bennett, 1965) used a similar approach, and like the original Snellen design, serifs were the most widely used on letters, serifs were short lines or blocks added at an angle to the ends of the limbs of letters, a more sophisticated type chart. Modern non-serif (or sanserif) fonts are used, the two non-serif font families that are widely used today are the 10-letter sloan (Sloan, 1959), and the British font (British Standard 4274, 1968). 10 Sloan letters as follows: C, D, H, K, N, O, S, V, Z, and British

Standard letters as follows: D, E, F, N, H, P, R, U, V, Z (Budiana et al., n.d.; Rabbets, 2007).

Sometimes determination sharpness vision different Among one charts with other charts. A client possible have good sharpness with letter chart but not enough sharp with charts numbers. the best is client could determine or read inspection chart sharp vision with character alphabet or easy numbers, however difficult for memorized by the client (Albert E. Sloane et al., 1979).

b. Magnitude Size Vision Wall Chart font

The font size used use Snellen Fraction (Grosvendor Theodore, 2007). Every line is different the magnitude adapt with row fractions use AAO standard.

c. Color Letter Fonts Vision Wall Chart

All charts inspection sharp vision use color black, because color black with background white give contrast best, and selection color black could used no only for people with disturbance general vision too used for inspection sharp vision in people with blind color partial and blind total color.

d. Vision Wall Chart Arrangement

The following is attached order of Vision Wall Chart:

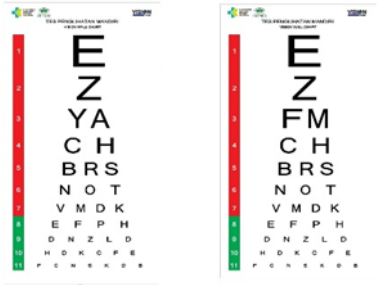

Figure 1. Vision Wall Char Chart Arrangement

Trials Show Work Vision Wall Chart

In trials show work Vision Wall Chart, with method do inspection sharp vision to 40 respondents use Projector Shin Nippon CP-500 and Vision Wall Chart at a distance examination of 6 meters in the Executive Poly Refraction Room Installation Home National Eye Center Pavilion & Lasik Cicendo Bandung Eye Pain obtained the following results:

Table 1 Recap of UCVA Vision Wall VS Chart Projector Inspection Results

No Resp	Name	Age (year)	JK	UCVA				Compatibility Visus	
				Vision Wall		Projector Charts			
				OD	OS	OD	OS	OD	OS
1	Sutisna	49	L	11	11	1.0	1.0	=	=
2	Disa Anisa Princess	21	P	2	3/60	0.1	0.05	X	=
3	Fitria Ginassany	27	P	11	11	1.0	1.0	=	=
4	Kiki Sri	23	P	11	11	1.0	1.0	=	=
5	Dewanti Widia	34	P	8	8	0.5	0.5	=	=
6	Afni N	35	P	11	11	1.0	1.0	=	=

7	Epen	52	L	2	5	0.1	0.2	X	X
8	Eli Rosanah	46	P	3/60	3/60	0.05	0.05	=	=
9	Fira	27	P	11	11	1.0	1.0	=	=
10	Wawan Hermawan	43	L	11	11	1.0	1.0	=	=
11	Desi Nasari	21	P	6	6	0.3	0.3	=	=
12	Itang	35	L	11	11	1.0	1.0	=	=
13	Nabila Rahmadhanti	23	P	2	3	0.08	0.1	X	X
14	Heri Purwantara	60	L	11	11F2	1.0	0.8	=	X
15	Mamay	41	P	10	11	1.0F3	1.0	=	=
16	Permana Yuda	30	L	11	11	1.0	1.0	=	=
17	Ijah Hadijah	40	P	11	11	1.0	1.0	=	=
18	Bayu Nugroho	28	L	10	10	0.6	0.6	X	X
19	Faisal Ramdhani	27	L	11	11	1.0	1.0	=	=
20	Rina Jasmine	21	P	11	11	1.0	1.0	=	=
21	Risma Suminar Sari	25	P	11	11	1.0	1.0	=	=
22	Iqbal Purnama Basir	20	L	11	11	1.0	1.0	=	=
23	Dede Mukhlis	23	L	8	8	0.5	0.5	=	=
24	Febrian Romadony	26	P	11	10	1.0	0.8F3	=	=
25	Iwan Setiawan	25	L	5	5	0.2	0.2	X	X
26	Pipit Fenti Hasanah	42	P	5	4	0.25	0.2	=	=
27	Irm Yulianti	34	P	11	9	1.0	0.63F2	=	=
28	Artia Goddess	43	P	4	3/60	0.25	0.05	X	=
29	Sari Nurrita	35	P	3/60	2	0.05	0.15	=	=
30	Lina Marlin	49	P	10	11	1.0F2	1.0	X	=
31	Vina	19	P	8	9	0.5	0.5	=	X
32	Dhea Sundari Nur H	28	P	3	8	0.4F2	0.6	X	X
33	Asep Johan	28	L	8	8	0.5	0.5	=	=
34	Rafi Rezky Fh	15	L	3f	3f	0.125	0.125	X	X
35	Adam	22	L	3	5	0.1	0.5	X	X
36	Supriatna	29	L	7	2	0.32	0.1	X	X
37	Moch Dani Iskandar	47	L	11	11	1.0	0.8	=	X
38	Herna Nurhayati	45	P	9	9	0.5	0.5	X	X
39	Agung Wilma	24	L	10	10	1.0	0.8	X	=
40	Aldi	33	L	1	1	0.08	0.1	X	=
41	Andi Ikhsan	57	L	9	11	0.63	1.0	=	=
42	Suhadi	28	L	7	7	0.5	0.5	X	X

From the table the on could concluded that level suitability results inspection sharp vision use Shin Nippon CP-500 Projector and Vision Wall Chart achieve 70% conformity and 30% yield inspection using the Vision Wall Chart is obtained results sharp more vision low one line chart compared use Projector Shin Nippon CP-500.

With consider that distance inspection done on the distance, location, lighting the same room and person, then suspected the difference that occurred caused by existence difference lighting on the projector chart chart with chart chart vision wall.

Most visual acuity tests use a high-contrast black on white optotype, with printed charts typically having a dark to light luminance ratio of 3 : 100 or 5 : 100, such high contrast levels are not easily achieved with projectors or video charts, with ratios in the range of 10 : 100 or 20 : 100 more typical.

The ambient room illumination can significantly affect the contrast of the projected display projector and chart videos.

Contrast the snellen optotype is very influential to accuracy in determination sine correction on examination refraction subjective. When the client checked with inside Snellen chart room dark, client will look high contrast and objects no glare. But in normal conditions, contrast and glare reduce visual acuity, and even can more from condition pathological (Nema et al., 2009).

Lighting room inspection refraction must pay attention not to annoying at times inspection refraction subjective. Condition base every source light is suitability with activities carried out. Watts, temperature color and intensity light is proper things considered. form luminaires (device fixed), placement, shadow cast and type lamp (bulb) must be considered everything (Riordan-Eva et al., 2005). Excessive lighting or exists light too much incoming to in room inspection refraction will resulted object projected by the Snellen optotype projector Becomes faint or not enough contrast. “For that light too bright, projector impressions are not will looks” (Sirait, 2007). It caused by illumination or the disturbance light from optotype projector by excessive light, light the can originate from light lamp that room too light or light incoming sun to in room inspection refraction.

Lighting room inspection good refraction on examination sharp vision sine correction that is, between 10 and 20 foot candles (Nema et al., 2009). Placement Optotypes that don't appropriate make projected object no is at right in the viewing area client or no parallel with position eye client. Position client is at exactly 20 feet from examination chart, with position aligned charts with eyes, then ask for to client for read alphabet down to the smallest visible line or could read by the client (Silvestri, 2014).

No specifically distance placement optotype projector with screen projection will caused to magnitude projected object Snellen optotype projector Becomes no appropriate or no calibrated. The magnitude object projected by the Snellen optotype projector must customized with distance inspection. though room inspection length of 20 feet (6m) is considered same with vision not finite (Yanoff et al., 2014).

Effect lighting on visual acuity has been summarized with both by Riggs (Riggs LA, 1965), who stated that bad visual acuity on the level scotopic where is the receptor parafoveal trunk or peripheral dominate (Gunter K. von Noorden et al., 2002).

Printed panel charts, local direct illumination may be required to achieve the required chart luminance, for standard chart luminance ranges from 85 to 300 cd/m^2. Sheedy and co-workers (1984) showed that in lighting changes the visual acuity score is about 0.02 log units,

which correspond to 1/5 of a line or 5% change in MAR. Compromise The chart luminance most commonly used as standard is 160 cd/m^2, clinical tolerances of 80 to 320 cd/m^2 for test chart luminance may be reasonable and practical.

CONCLUSION

Principle theory snellen fraction can easy applied in creating a vision wall chart. Management creating a vision wall chart consists from determination of line and chart notation, selection types of fonts and letters, preparation of chart layouts consisting of from line sequence, indicator color for notation vision, distance space, spacing between lines, colors letters, type ingredient print, and finally produce charts with a digital printing system. San Serif is the selected font for type chart vision wall lettering. Magnitude Vision wall chart font size is adjusted with calculation big alphabet use principle snellen fraction. Color black is choice font font color chart vision wall letters chart vision wall arrangement.

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