**Effective Health checkup methods for Adults with Intellectual Disabilities combined with Autistic Tendencies in the Community:**

**Intervention to the Workplace user and their Family members for Vision tests**

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**Introduction**

According to The World Health Organization (WHO) report in 2000, appropriate health assessment by medical staff was one of the most important needs for people with ID all over the world.

According to the 2005 National Consensus in Japan, three fourths of people with ID were living in communities and the number of those in their 30’s, the second baby-boom generation, was increasing along with the general population. These statistics show that health problems of adults with ID in Japan will become more serious issues in the near future, especially in the community. Japanese government policies focus solely on early detection of abnormalities in children and the employment of adults with ID, and as of yet there has not been a national policy framework on health issues for adults with ID.

We reviewed literature on health assessment and found that intervention studies dealing with health checkups of adults with ID in the communities were very rare. A few intervention studies were carried out by a research team in Australia. There is, however, no system promoting annual health care checkups for adults with ID as is available for people with ID in Japan. In addition, we focused on adults with ID combined with autistic tendencies who tend to have communication difficulties, which is one of the features of autism.

There are about six thousand workplaces called ‘Shoh-kibo-Sagyosho’ which provide jobs and activities for adults with ID in the community in Japan. Most of them do not have a full time medical staff, yet, the facilities are required by management regulations or by law to have health checkups at least once or twice per year. We believe if we approach workplaces even in one community, the results will contribute to maintaining and promoting the health of people with ID.

Therefore, this study aimed to provide an intervention for workplace users with ID combined with autistic tendencies to be able to take proper vision tests which is one component of health checkup examinations.
Definition of Terms

Autistic tendency
In order to receive welfare services in Japan, a person needs at least one medical diagnosis. If a person has ID combined autism, he or she tends to be diagnosed with ID only, and the autism goes undiagnosed. In this study, we approached adults with ID, even though they had not been diagnosed with autism, but exhibited characteristics similar to autism. To clarify the subject properly, we use the expression "autistic tendency" when an adult has similar actions under category A of Autistic Disorder which is defined in DSM-TR see appendix.

Methods

1. Subjects
We chosen an area (Area Z) in a big city - ID population ratio of the area was similar to the national average (0.5%). In Area Z, there were seven workplaces for adults with ID. The number of users of each facility ranged from eighteen to forty seven. The ages of the users ranged from late teens to 70's.

2. Procedures
We first asked the administrators of the workplaces for permission to do our study. After a phone call to each facility administrator, the researcher visited each workplace one by one, and explained the purpose of this study with oral and written descriptions. Upon receiving understanding of our study from administration, the researcher asked them to distribute the materials for research cooperation to the users. Replies from the users or their guardians were sent back to the researchers directly.

3. Intervention
Before the intervention, the first author worked as a volunteer at each workplace three or more times for the purpose of becoming familiar with its users.
After consulting with the staff at the workplaces, we carried out our intervention several weeks prior to health checkups in order not to increase anxiety about medical examinations among the users.
Intervention: a) asking family members what kind of problems he or she had at the health checkup, b) observing him or her during the jobs and activities at the workplace or at home, c) building trust in relationships with him or her, d) checking a matching ability using Landolt rings, e) planning supports focused on understanding vision test using visual aids individually, f) practicing matching gradually using visual aids, and G) accompanying them to health checkups.

4. Ethical Considerations
Ethical approval for this research was obtained from the Ethical Committee of Kawasaki University of Medical Welfare. Using a consent form when obtaining consent for participation, explanations were given to the participants and their family members, and were given assurances about the protection of their privacy.
Results

Table 1 shows subjects’ backgrounds. Three participants are males, ages ranging from 20’s to 30’s, ID from moderate to severe. One of them was able to take the vision test with the both eyes on a vision chart. The other could have never taken proper a vision test at their health checkups.

Table 1. Subjects’ Backgrounds and Pre-Intervention Situations

<table>
<thead>
<tr>
<th>Case</th>
<th>Age</th>
<th>Sex</th>
<th>ID</th>
<th>Pre-Intervention Situations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>Early 30’s</td>
<td>Male</td>
<td>Severe</td>
<td>No results for vision tests ( Had never taken vision tests properly )</td>
</tr>
<tr>
<td>Y</td>
<td>Late 30’s</td>
<td>Male</td>
<td>Moderate</td>
<td>Took vision test in both eyes using animal shapes on a vision chart</td>
</tr>
<tr>
<td>X</td>
<td>Early 20’s</td>
<td>Male</td>
<td>Severe</td>
<td>No results for vision tests ( Had never taken vision tests properly )</td>
</tr>
</tbody>
</table>

Mr.Z was early 30’s and with severe ID. He had not been able to undergo vision tests before, and did not have any data related vision tests. With his mother’s information about his pre-situation, he has been passed doing vision tests at his health checkups by medical staffs because he had never done them before.

Mr.Y was late 30’s and with moderate ID. He was able to take vision test in both eyes using animal shapes on a vision chart. His mother wanted him to take vision test in each eye.

Mr.X was early 20’s and with severe ID. He had not been able to undergo vision tests before and he did not have any data related vision tests. His mother hoped that he was going to be able to take vision test in the future.
Mr. Z had difficulty of taking vision test. He was observed assembling of a plastic model at home, and he could match using a Landolt card with ease. He had already known the researcher more than ten years. We planned support focused on card-to-card matching and card-to-chart matching. During the practice for card-to-chart matching, he was using two hands during the matching, so we made a handmade eye-cover which was introduced by Hiraki et al. in their DVD. At times he was interested, but other times seemed indifferent. We had difficulties practicing with him and we did not have enough time to do it before his health checkup. At his health checkup, an examiner knew that he could not undergo a vision test before. The tester determined not him to take vision test and told his mother about it. The researcher told the inspector that he had practiced vision test at workplaces and suggested her doing a general vision test for him. Then, the examiner cooperated with him and us for proper vision test using a handmade eye cover and a Landolt ring card. Finally, he was able to understand how to use a Landolt ring card and match on Landolt ring chart during his vision test.

### Table 2. Intervention Process on Each Case

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Mr. Z</th>
<th>Mr. Y</th>
<th>Mr. X</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Asking family members what kind of problems he or she had at the health checkup</td>
<td>Difficulty of taking vision test*</td>
<td>Difficulty of taking vision test*</td>
<td>Difficulty of taking vision test and hearing test</td>
</tr>
<tr>
<td>B) Observing him or her during the jobs and activities at the workplace or at home</td>
<td>He was observed assembling of a plastic model at home</td>
<td>He was able to do most of the jobs at the workplace</td>
<td>He could sort pencils by color but was sometimes confused by patterns</td>
</tr>
<tr>
<td>C) Building trust in relationships with participants</td>
<td>He had already known the researcher more than ten years</td>
<td>He had already known the researcher more than ten years</td>
<td>First encounter with researcher, researcher first sat beside him, greeted him and gradually interacted with him at the workplace</td>
</tr>
<tr>
<td>D) Checking matching abilities using Landolt rings</td>
<td>Card-to-card matching was possible</td>
<td>Card-to-card matching was possible</td>
<td>Card-to-card matching was impossible</td>
</tr>
<tr>
<td>E) Planning supports focused on understanding vision test using visual aids individually</td>
<td>Card-to-card matching Card-to-chart matching (Landolt rings)</td>
<td>Card-to-card matching Card-to-chart matching (Landolt rings)</td>
<td>Objects matching Card-to-card matching (animal shapes)</td>
</tr>
<tr>
<td>F) Practicing matching gradually using visual aids</td>
<td>Card-to-Chart matching At times was interested, at times seemed indifferent</td>
<td>Card-to-chart matching He sometimes mimicked language instructions</td>
<td>Shape matching 1) objects 2) cards(shapes) 3) cards(animal shapes) (with more than 2weeks of practice)</td>
</tr>
<tr>
<td>G) Accompanying them to health checkups</td>
<td>Using a Landolt rings card with handmade-eye-cover in each eye</td>
<td>Using a Landolt rings card with handmade-eye-cover in each eye</td>
<td>Using animal shape cards with both eyes</td>
</tr>
</tbody>
</table>

*workplaces can select tests on their own for their health checkups, and workplaces of Mr. Z and Mr. Y did not include hearing tests among health checkup examinations.
Mr. Y had difficulty of taking vision test. He was able to do most of the jobs at the workplace, and he could match using a Landolt ring card with ease. He had already known the researcher more than ten years. We planned support focused on card-to-card matching and card-to-chart matching. During the practice for card-to-chart matching, he sometimes mimicked language instructions. For instance, when the researcher asked him “here” and pointed out a Landolt ring on a chart, he said “here” and not using card. So the researcher changed the instruction “here” and circled the Landolt ring on a chart by fingers, and he said “circle” and not using the card. We understood that if we use verbal instruction and a card at the same time, he reacted only verbal instruction. Therefore, the researcher tried to point out a Landolt ring on a chart and no verbal language; he could match with a Landolt card with ease. At his health checkup, at first the researcher told an examiner that he had practiced vision test, and suggested using a Landolt chart on each eye and not using verbal instruction. The tester cooperated with him and us for proper vision test using a handmade eye cover and a Landolt card same as Mr. Z. He was able to use a Landolt card on Landolt chart during his vision test.

Mr. X had difficulty of taking vision test and hearing test. He could distinguish pencils by color but was sometimes confused by patterns at the workplace. In order to build trust in a relationship with him, the researcher first sat beside him, next greeted him, and then gradually interacted with him at the workplace. After assessing matching his ability, he was not able to match a Landolt ring card to a Landolt card because he could not understand the directions of Landolt rings. Then, we planned to practice on ‘object matching’. First of all, we used the shapes of a triangle, a circle, and a square of the objects. Next, we tried to use cards with those shapes. After he could match the cards with shapes, we changed the cards to animal shapes such as a bird, a butterfly, a dog, and a fish. Those shapes are a vision screening criteria used worldwide. He could distinguish only the fish and the butterfly, and the maximum numbers of matching were four times. We reported the result to an examiner at his health checkup. He was finally able to take a vision test in both eyes, using a chart with animal shapes.

**Conclusion**

One of the most important parts of our research was to assess a person’s matching abilities to provide proper vision tests. If a person with ID combined autism can match directions of Landolt rings on cards (card-to-card matching), the person will be able to match Landolt rings on a chart with a card (card-to-chart matching). On the other hand, if a person with combined autism cannot understand directions of Landolt rings on cards, the person needs to practice on matching using objectives (object matching) to understand how to match one-to-one. If the person can understand the concept of matching, then the procedure can be carried out in the same way with cards.

During the intervention, even though one of subjects knew the researcher very well, he often seemed indifferent during the practicing, and was never able to cooperate with those practices. This implies that he had a weak adaptation to change which is one of the characteristics of autism, and thus may impede him to practice regularly. In intervention study toward people with ID combined autism, the researcher need to pay close attention not to create significant environmental changes for them and not to disturb the rhythm of their daily lives.

In Japan, the School Health and Safety Law stipulates that every elementary school student must take an annual health checkup. In our study, even though all participants were more than 20’s, they have difficulties undergoing their health checkups. It means that the subjects, unfortunately, had never been provided with a chance to learn how to deal with vision tests properly. In fact, they had been ignored for a long time by the majority of health professionals during their annual health checkups. This situation occurs not only in the region where we intervened, but also in other areas of Japan and all over the world (OoyaS; 2006, 2009, Wobb O et al.;1999, Lennox N. et al.;1997,2005).
This study, however, shows that just one concentrated approach as an intervention study could provide proper vision tests for adults with ID and combined with autistic tendencies who had never taken a vision test before in the community.

**Acknowledgements**

We would like to express our sincerest gratitude to all participants, their guardians, and facility workers of workplaces for their understanding and cooperation.

**References**


The American Psychiatric Association's DSM-IV-TR Diagnostic Criteria for 299.00 Autistic Disorder

A. Six or more items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):

(1) Qualitative impairment in social interaction, as manifested by at least two of the following:
   · marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
   · failure to develop peer relationships appropriate to developmental level
   · a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)
   · lack of social or emotional reciprocity

(2) Qualitative impairments in communication as manifested by at least one of the following:
   · 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)
   · in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others
   · stereotyped and repetitive use of language or idiosyncratic language
   · lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level

(3) Restricted repetitive and stereotyped patterns of behavior, interests, and activities, as manifested by at least one of the following:
   · encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
   · apparently inflexible adherence to specific, nonfunctional routines or rituals
   · stereotyped and repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements)
   · persistent preoccupation with parts of objects

B. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.

C. The disturbance is not better accounted for by Rett's Disorder or Childhood Disintegrative Disorder.