

Evaluation of a Lättläst (LL) Manga in an Easy-to-read Pamphlet about Contraception for Postpartum Couples with Intellectual Disabilities

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Abstract

The purpose of this study was to evaluate a manga in an easy-to-read educational pamphlet about contraception devised by the present researchers for postpartum couples with intellectual disabilities (ID). Lättläst (LL) (easy-to-read) manga drawn by a manga artist in accordance with existing guidelines was used as part of the instructional pamphlet. The LL manga was evaluated in terms of both comprehensibility and readability through data collected from a purposeful sample of 23 participants using self-administered questionnaires between March and June 2020. The correct answer rate for the questions about two contrasting couples depicted in the LL manga was between 56.5% and 73.9% (average: 70.8%). The correct answer rate for the questions on the first couple (case A) was higher than that for the questions on the second couple (case B). In addition, 73.9% of the participants selected case A as a role model, whereas none selected case B. The most common reason for this selection was "The couple talked to each other and made a decision." Likewise, 65.2% of the participants evaluated the readability highly. These findings indicate that the LL manga invented in this study had good comprehensibility and readability, and is therefore useful to improve knowledge and attitudes concerning contraception among people with ID.

1. Introduction

When family planning, postpartum couples should have sufficient knowledge of and understand how to use contraceptives. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) defines intellectual disabilities (ID) as neurodevelopmental disorders beginning in childhood that are characterized by difficulties in the conceptual, social, and practical domains¹⁾. A diagnosis of ID based on the DSM-5 requires confirmed deficits in intellectual functioning, including reasoning, problem-solving, planning, abstract thinking, judgment, academic learning, and learning from experience¹⁾. Individuals with ID tend to be better at remembering experiences than imagining what may happen; therefore, most such individuals cannot anticipate occurrences under some expected situations. Accordingly, they seem to have difficulty establishing causal relationships between sexual behavior, pregnancy, childbirth, and life changes.

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In addition, most people with ID encounter difficulties with reading and comprehension. Manga is a medium in which information is conveyed using mostly images with relatively little text. Therefore, the present researchers assumed that it would be useful to produce educational material for people with ID utilizing manga to tell a story through images. Since educational materials using manga expressions were popular in special school students with ID, Fujisawa created pictograms using manga symbols. A comparative study between the manga symbols and general pictograms for the same words indicated that the manga symbols were preferred by the sample students with ID²⁾, which seemed to be the result of the increased familiarity with the people and animals depicted using manga expressions. Moreover, the animation of manga symbols devised by the same researcher to support those persons' independence in their everyday lives promoted the acquisition of proper methods for the brushing of teeth and for urinating among young children with autism³⁾. Furthermore, manga books were the most popular type among people with ID in a survey about "favorite books" and "desired books."⁴⁾ A number of educational manga books have been published across many fields in Japan. Nakazawa⁵⁾ pointed out that manga facilitates story comprehension among children by describing the background and context through pictures.

However, not everyone finds manga easy to read, such as people who are unfamiliar with its specific format, such as "panels" and "*mampu*" (symbols and letters used in manga to represent actions). The subjects are people with ID. As these individuals have relatively low literacy levels, we selected Lättläst (LL) (easy-to-read) manga as instructional materials. LL books are easy to read, which is important when the target audience is intellectually or mentally disabled persons, people with aphasia or dyslexia, and the aged in several developed countries. LL books have been produced in Sweden since the 1960s³⁾. Swedish LL books were introduced into Japan by Fujisawa and Terao^{6,7)†1)}, where the concept was explained for the first time by Fujisawa and Hattori⁸⁾. The first author and manga researchers created a genre of LL manga that has the same purpose and role as LL books. However, to date, few LL manga products are available^{9)†2)}. Therefore, in this study, we attempted to create an LL manga about contraception for postpartum couples with ID in accordance with the "Guidelines for Creating LL Manga"¹⁰⁾.

The objective of this study was to evaluate the effects of an LL manga in an instructional pamphlet about contraception in terms of comprehensibility, readability, and the intention to conduct family planning among individuals with ID. The research questions were as follows: i) Could the participants comprehend the LL manga?; ii) How did the LL manga affect the participants' intention to carry out family planning?; and iii) How did the participants perceive the readability of the LL manga?

2. Methods

2.1 Research design, participants, and procedure

This study was part of a larger and more extensive study that used an interventional one-group pre- and post-test design before and after reading educational material. The procedure was as follows: First, we explained the study purpose and methods to the administrators at two social welfare service facilities and obtained their consent to carry it out. Next, we explained the criteria for participant selection to the administrators, who then provided an explanation to the care staff in charge of participants with ID who fit the criteria and obtained their consent. The staff then explained the study purpose and methods and obtained consent from the participants before each investigation. The inclusion criteria were being an adult (older than 20 years old), possessing a passbook for moderate to mild ID, and marital life experience.

2.2 Data collection

Data collection was conducted from March to June 2020. The data collection process consisted of obtaining written consent, taking a pre-test, reading the pamphlet, and taking a post-test, in that order. In view of characteristics of ID, the participants were assisted by care staff who were familiar with them when reading the text in the questionnaires and pamphlet. The care staff also filled in the questionnaire on behalf of the participants at their request. We asked the care staff not to provide any information about the

correct answers in advance. The entire process from pre-test to post-test took 20-60 minutes.

2.3 Educational pamphlet on contraception

For the purposes of this study, we contrived a 20-page pamphlet about contraception^{†3)} that was composed of two parts: the first part contained an LL manga, and the second contained explanations about contraceptive methods in accordance with the "Guidelines for Providing Easy-to-Read Information to People with Intellectual Disabilities" and easy-to-read illustrations based on LL manga. We already demonstrated our evaluation process for the second part of the pamphlet in another paper¹¹⁾. In this paper, we describe the investigation regarding the first part of the pamphlet, which was 11 pages in length.

2.3.1 "Guidelines for Creating LL Manga"

Table 1 shows the "Guidelines for Creating LL Manga." These guidelines were contrived by Tsuru based on the results of the investigation by Fujisawa and Tsuru¹²⁾ that examined misunderstandings caused by the manga illustration style. These guidelines aim to instruct artists about how to create LL manga for people with low manga literacy.

2.3.2 The LL manga

Two contrasting couples were depicted in the pamphlet to convey the importance of family planning to readers. The story is as follows: The first couple has carried out family planning during the puerperium and used contraceptives following advice from a midwife. Consequently, they lived a quiet life. By contrast, the second couple had not carried out family planning or obtained any information about contraception. Accordingly, the couple had their second baby soon after their first. After the second baby was born, the couple became busy and hassled.

2.3.3 Structure of part of the pamphlet

Figure 1 shows part of the LL manga that was included in the pamphlet. The pamphlet was drawn in two colors and presented on A4 pages to provide sufficient readability. The stories of the first and second couples were eight and three pages long, respectively.

2.4 Questionnaire

The questionnaire was composed of four sections. The first section was for collecting the participants' sociodemographic data, including age, gender, type of ID passbook, child status, and pregnancy experience (for the female only). The second section aimed to assess the participants' knowledge about contraception before reading the pamphlet. The third section included the same questions as the second to determine the participants' comprehension regarding contraception after reading the pamphlet; this section also included a question regarding the participants' intention to use contraceptives. The fourth section aimed to evaluate the participants' views on the readability of the pamphlet using a multiple-choice question (responses: good, moderate, and bad). Finally, the reasons for the participants' responses were obtained through an open-ended question.

2.5 Analysis

Descriptive statistics were utilized to describe the frequencies, means, and standard deviations (SDs) of the participants' characteristics and study variables. IBM SPSS version 20.0 was used for the statistical analysis. In addition, the responses to the open-ended questions were categorized by content and grouped by similarity.

2.6 Ethical considerations

This study was approved by the research ethics committee of Nagoya Women's University (No. 2019-12).

Table 1 Guidelines for creating LL manga

Contents
<p>1 Do not use deformed characters Changing the character's form in different panels misleads the reader to think that a new character has appeared, even if it is supposed to be the same character, just simplified. A typical example is a seven-head-high character changed into a two-head-high character (often called SD, meaning super deformed or chibi character).</p>
<p>2 Avoid using the typical manga symbols (<i>manpu</i>) Some symbols, called <i>manpu</i>, are typically used for manga. These symbolize a character's emotions or status visually. For example, vertical lines on the face express the paleness of a character because the character is confused, in despair, or horrified; sweat expresses uncertainty, and almost exploding pulsing veins express anger. Since <i>manpu</i> are not real sweat or veins, but only symbols, they are often mistakenly interpreted by the reader if he/she is not accustomed to them.</p>
<p>3 Keep the panels simple! The page should be a simple layout with panels, and the panels should be read from the top-right to bottom-left and follow a time flow. There should be around 2 to 3 stripes, with a maximum of six panels on each page.</p>
<p>4 Explain the storyline carefully, following the time flow. Do not omit a causal or result scene. Refrain from using flashbacks to show what has happened in the past. Avoid sudden time or place switches between panels, but explain and connect each of the scenes carefully, following the time flow.</p>
<p>5 Refrain from using metaphoric or symbolic expressions. Metaphoric or symbolic expressions are often used in manga; for example, drawing collapsing buildings to express despair.</p>
<p>6 Limit the amount of information in each panel, keep the length of the sentences short, and keep the form of the picture simple. Put one point in each panel. Avoid flooding the panel with excessive information. Use short, easy-to-read sentences. The text in a speech bubble should also be easy-to-read with line breaks and space between words (usually, there is no space between words in Japanese). Simple and clear pictures are preferred. Also, books printed in a larger size might be helpful to make the manga easier to read.</p>
<p>7 Avoid using narration (a character's inner voice that is not in a speech bubble) because this may be misunderstood as the sudden emergence of another unknown character.</p>
<p>8 Avoid layered pictures, irregular panels, and multiple scenes in one panel. Layered expressions, such as a character drawn in the front, placed on the top layer across multiple panels, will confuse the reader in terms of the order he/she should read the panels. As noted in point 3, the panel layout should be kept simple.</p>
<p>9 Place the character and speech bubbles close to each other. Keep the speech bubble close to the character who is speaking; the tail of the speech bubble should point to the character to make it easily understandable what is spoken by whom.</p>
<p>10 The positions of the characters should be fixed. If multiple characters are in one scene, each character's horizontal position should be fixed. Further, do not change the position. Once a character is placed on the left, that character should remain on the left.</p>
<p>11 Avoid changing the point of view Do not zoom in on the body parts of a character or to something that is far away; do not draw something from different angles. Fix and keep the point of view in every scene, like the visual field of a camera.</p>
<p>12 Be careful about using expressions that ask the readers to interpret. For instance, after a scene of a failed joke, the frozen facial expression of a character prompts the reader to understand how bad the joke was. This kind of expression requires an active interpretation of the scene and is sometimes difficult to understand.</p>

These guidelines are taken from reference⁷⁾; some contents have been slightly modified.

In Japanese, translated by Bon Won Koo.



Figure 1 Let's talk about family planning!

- ① We talked to each other about our family plan.
- ② "What should we do about family planning?"
- ③ "I want to have a second baby when the first baby is 3 years old."
- ④ "We will use contraceptives until our baby is 3 years old."
- ⑤ "A male condom is good for us, isn't it?"
- ⑥ "Yes, I think so. Why don't we go together to the pharmacy and get them?"

(In Japanese. The manga was drawn by Hitomi MATSUI, and the title and the characters' speech in bubbles were translated by the author of this article.)

Written informed consent was obtained from all participants after providing an explanation of the study purpose and methods. All participants were notified that participation in the study was voluntary and that they could decline participation and withdraw from the study at any time with no penalties. They were also notified that the study would provide no direct benefits or compensation for participation, but that they could benefit by becoming more aware of contraceptive knowledge and practices.

3. Results

3.1 Demographic characteristics of the participants

The participants' demographic characteristics are shown in Table 2. In total, 23 individuals (12 men [52.2%], 11 women [47.8%]) met the inclusion criteria and participated in the study. Twenty-two of the 23 participants were in a partnership (11 couples). The mean age \pm SD of the participants was 41.9 ± 10.0 years (men: 44.3 ± 9.5 years, women: 39.2 ± 10.2 years; age range: entire sample: 24-64 years [men: 33-64 years, women: 24-58 years]). The majority of the male participants were in their 40s, and the majority of female participants were in their 30s. According to the participants' passbooks, 69.6% had mild ID (B2) and 30.4% had moderate ID (B1). Two couples among the participants had children. One female had experienced

Table 2 Participants' characteristics (N=23)

Variables	n	%
Gender		
Male	12	52.2
Female	11	47.8
Age, years (mean \pm SD)	42.1 \pm 1.6 (range: 24-64)	
Age of males, years (mean \pm SD)	44.3 \pm 9.5 (range: 33-64)	
20s	0	0.0
30s	4	33.3
40s	6	50.0
50s	1	8.3
60s	1	8.3
Age of females, years (mean \pm SD)	39.2 \pm 10.2 (range: 24-58)	
20s	2	18.2
30s	5	45.5
40s	2	18.2
50s	2	18.2
Type of passbook for people with ID		
B1 (Moderate) total	7	30.4
Male	3	
Female	4	
B2 (Mild) total	16	69.6
Male	9	
Female	7	
Number of children		
0 total	15	65.2
Male	8	
Female	7	
1 total	8	34.8
Male	4	
Female	4	
Experience of pregnancy (females only)		
No	6	54.5
Yes	5	45.5

ID: intellectual disabilities

pregnancy but did not have any children.

3.2 Frequencies of responses regarding the comprehension of the LL manga

Table 3 shows the frequency of correct or desirable responses to each question regarding the comprehensibility of the manga. The correct or desirable answer rate ranged from 56.5% to 82.6%, with a mean of 70.8%. The correct answer rate for the questions about case A was higher than that for the questions about case B. The free responses regarding the reasons for choosing case A as a role model are shown in Table 4. Among the participants, 73.9% selected case A as their role model, whereas none selected case B. The most common reason for selecting case A was "The couple talked to each other and made a decision," followed by "The couple made a family plan," and "If a couple does not use contraceptives, they will have another baby, which would cause them to have a more difficult life."

3.3 Evaluation of the readability of the LL manga and associated reasons

Table 5 shows an evaluation of the readability of the LL manga and associated reasons. Among the participants, 65.2% responded that the readability was "good"; the reasons for this included the clear and large manga images and text in the speech bubbles, and the fact that the kanji characters were accompanied by kana.

4. Discussion

4.1 Evaluation of the LL manga

We used an LL manga in a pamphlet to encourage readers to consider using contraceptives as a personal matter. Regarding comprehensibility, the correct answer rate for the questions about the two contrasting

Table 3 Frequency of responses to questions regarding comprehension of the manga story n (%) (N=23)

Question	Correct	Incorrect	I do not know
Did case A use contraceptives?	15 (65.2)	4 (17.4)	4 (17.4)
Did case A have a second child?	19 (82.6)	1 (4.3)	3 (13.0)
Did case A receive counseling about using contraceptives?	19 (82.6)	2 (8.7)	2 (8.7)
Did case B use contraceptives?	14 (60.9)	6 (26.1)	3 (13.0)
Did case B have a second child?	17 (73.9)	3 (13.0)	3 (13.0)
Did case B receive counseling about using contraceptives?	13 (56.5)	7 (30.4)	3 (13.0)
Question	Desirable	Undesirable	I do not know
Will you do the same as case A or case B?	17 (73.9)	0 (0.0)	6 (26.1)
Average	16.3 (70.8)	3.3 (14.3)	3.4 (14.9)

Table 4 Reasons for choosing case A (N=17)

Reasons †	n (%)
The couple talked to each other and made a decision.	7 (41.2)
If a couple does not use contraceptives, they will have another baby, which would cause them to have a more difficult life.	5 (29.4)
The couple made a family plan.	4 (23.5)
Child-rearing is demanding.	1 (5.9)

† The reasons were abstracted and categorized from free-descriptive answers.

Table 5 Evaluation of readability and reasoning (N=23)

	n (%)	Reason †
Good	15 (65.2)	The manga pictures were clear. The manga pictures were big. The manga pictures were organized. The Chinese characters were accompanied by kana. The letters were big and easy to read. There were no incomprehensible words.
Moderate	4 (17.4)	I could not remember the names of the main characters.
Bad	4 (17.4)	I could not understand the story by only seeing pictures. The contents were confusing. There should be some measures other than manga to explain contraceptive methods.

† Representative descriptions were extracted.

couples depicted in the LL manga were between 56.5% and 73.9% (average: 70.8%). More correct answers were received for the first couple (case A), who used contraceptives, than for the second (case B), who did not. One of the reasons for this may be that the manga for case A was longer (five more pages) and drawn in more detail than case B.

Among the participants, 73.9% chose case A as their role model, with the primary reason being that "The couple talked to each other and made a decision," followed by "The couple made a family plan," and "If a couple does not use contraceptives, they will have another baby, which would cause them to have a more difficult life." Likewise, 65.2% of the participants evaluated the manga highly in terms of readability. Specifically, the reasons for this were the clear and large manga images and text in the speech bubbles, and the kanji that accompanied the kana characters. These reasons suggest that the participants obtained the message that the researchers had intended to convey. The LL manga contrasting the two cases increased the participants' comprehension of the necessity to discuss and practice contraception. We can say that this is because the LL manga was produced following the "Guidelines for Creating LL Manga," which were developed based on the results of an investigation regarding the comprehension of people with ID by drawing the same scenes in general and in LL manga.

However, 29.2% and 17.4% of the participants did not attain desirable results on comprehensibility and readability, respectively. In addition, we received some negative assessments of the LL manga, including comments about the necessity of reading the characters. LL manga is expected to convey many messages through pictures and to be accompanied only by minimal text in balloons. Many educational manga books have been published in Japan; however, in many such books, explanations about what they intend to teach readers can only be derived from the characters' narratives in speech bubbles. In other words, characters play a primary role in such educational manga books, which do not utilize the strength of manga effectively. We attempted to minimize the number of characters in the LL manga, but we had to use the names of the contraceptives and provide explanations. Therefore, one reason for the negative assessments could be said to be the pamphlet's theme of contraception.

4.2 Role of LL manga and outlook

Takemiya¹³⁾ proposed establishing a "functional manga" field as manga contributing to society by

discussing social issues and phenomena and placing importance on organizing and conveying information neutrally. The purpose of "functional manga" is to empower readers to state their opinions and to protect their rights. Everyone can decide if, with whom, and how many children to have freely and responsibly, referred to as "reproductive health and rights." Providing sufficient amounts of accurate information is essential to guarantee self-determination. The LL manga developed in this study shows readers the importance of deciding whether to have a child on their own through concrete examples. Accordingly, the LL manga in this study can be called functional manga.

This is the first interdisciplinary study by a nursing researcher and a verbal communication researcher who collaborated with manga researchers to investigate the effects of LL manga on improving care for people with ID. In future studies, LL manga could be applied to various themes in the health care setting.

4.3 Limitations

The findings were limited to the purposive sample of 23 participants. In addition, due to the caring staff's attendance in order to help to proceed with this investigation, participants may not have felt comfortable answering their perceptions in front of them, and therefore, bias may exist among the participants' responses.

4.4 Conclusion

The results of this study suggest that LL manga about contraception can have considerably good comprehensibility and readability, and thus, may be useful for improving knowledge of and attitudes toward contraceptive use among people with ID.

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Conflict of interest

None declared.

Notes

- † 1) Also, in Japan, several LL books have been published in recent years, including "*Let's go travel!*"¹⁴⁾ and "*First love*"¹⁵⁾. In those books, images are arranged similar to four-frame manga. In "*I will go to work making cookies. One day in the Life of Hiromi*"¹⁶⁾, images and pictograms are presented in an "easy-to-read" manner.
- † 2) Currently, there are only three products, including two trial products based on Swedish picture books for adults with ID^{17,18)} and a pamphlet for victims of the Eugenic Protection Law that explains how to apply for compensation¹⁹⁾.
- † 3) The latest version of the pamphlet can be downloaded directly from: https://researchmap.jp/read0123877/published_works

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