

# Quantitative word mapping of hemophiliac patients' opinions based on free-answer descriptions on a quality-of-life questionnaire

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## Introduction

We analyzed the free-answer descriptions given by hemophiliac patients in a quality-of-life survey.

## Methods

The total number of collected answer forms was 663, among which free descriptions were found in 312 cases. We used the Japanese textual data analysis software WordMiner version 1.150. Word mapping was drawn quantitatively by using the similarity measure of words appearing in the descriptions.

## Results

A total of 28,705 different words were used. The average number of words in each description was 30.1. The ten most frequently used words in descending order were as follows: "hemophilia", "injection", "anxiety", "possible", "hospital", "now", "therapy", "bleeding", "life", and "patient".

Three words, "hemophilia", "anxiety", and "medical expenses", were connected tightly on the word mapping to the description of the medical system, whereas the phrase "medical expenses" was surrounded by "public", "eternal" and "support". Regarding therapy, the word "injection" was located near "therapy", "possible" and "hurry". The word "gene therapy" was connected with "development" through the word "expectation". The word "drug" had three major satellites, "longer", "efficacy", and "continuation".

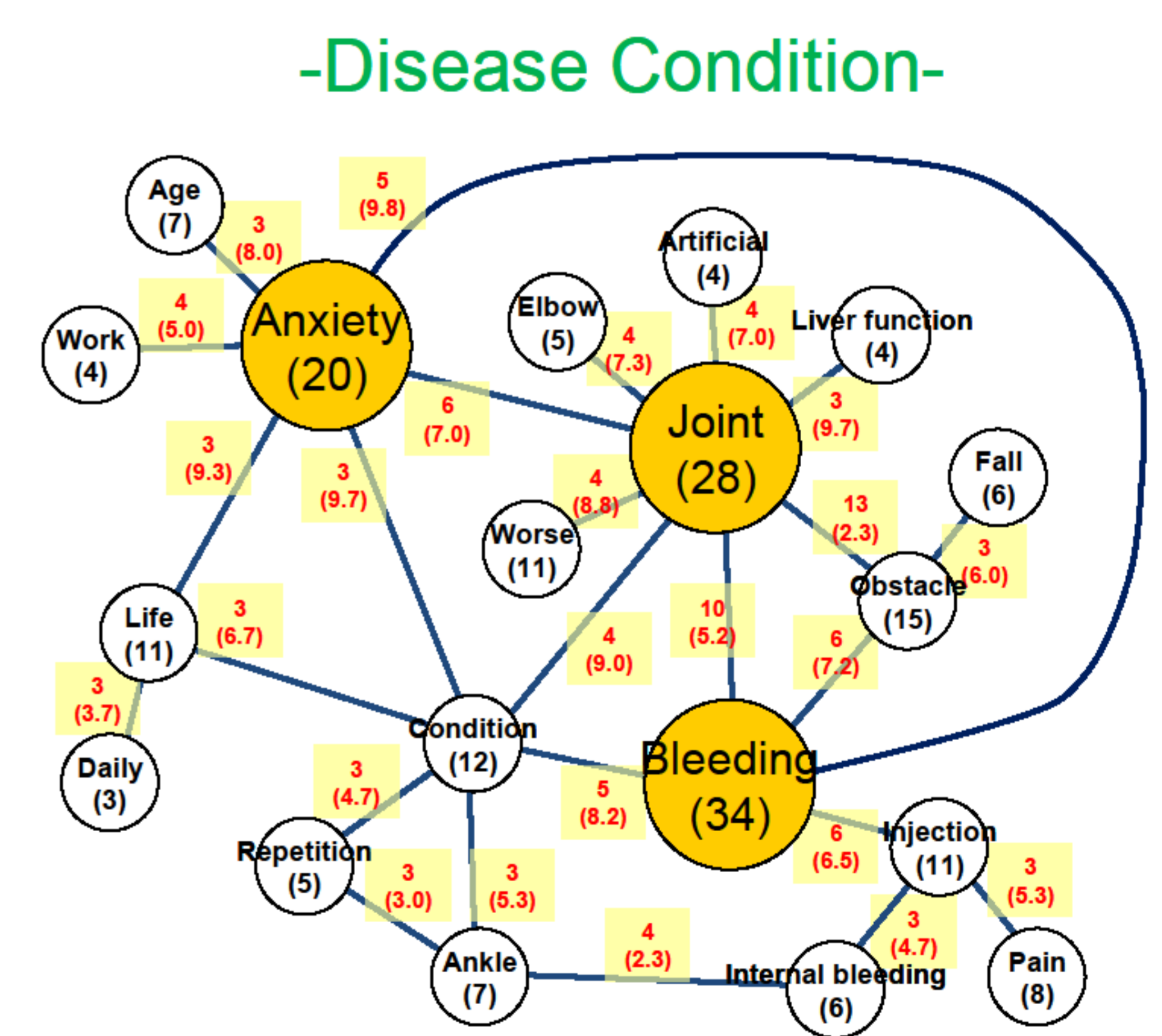
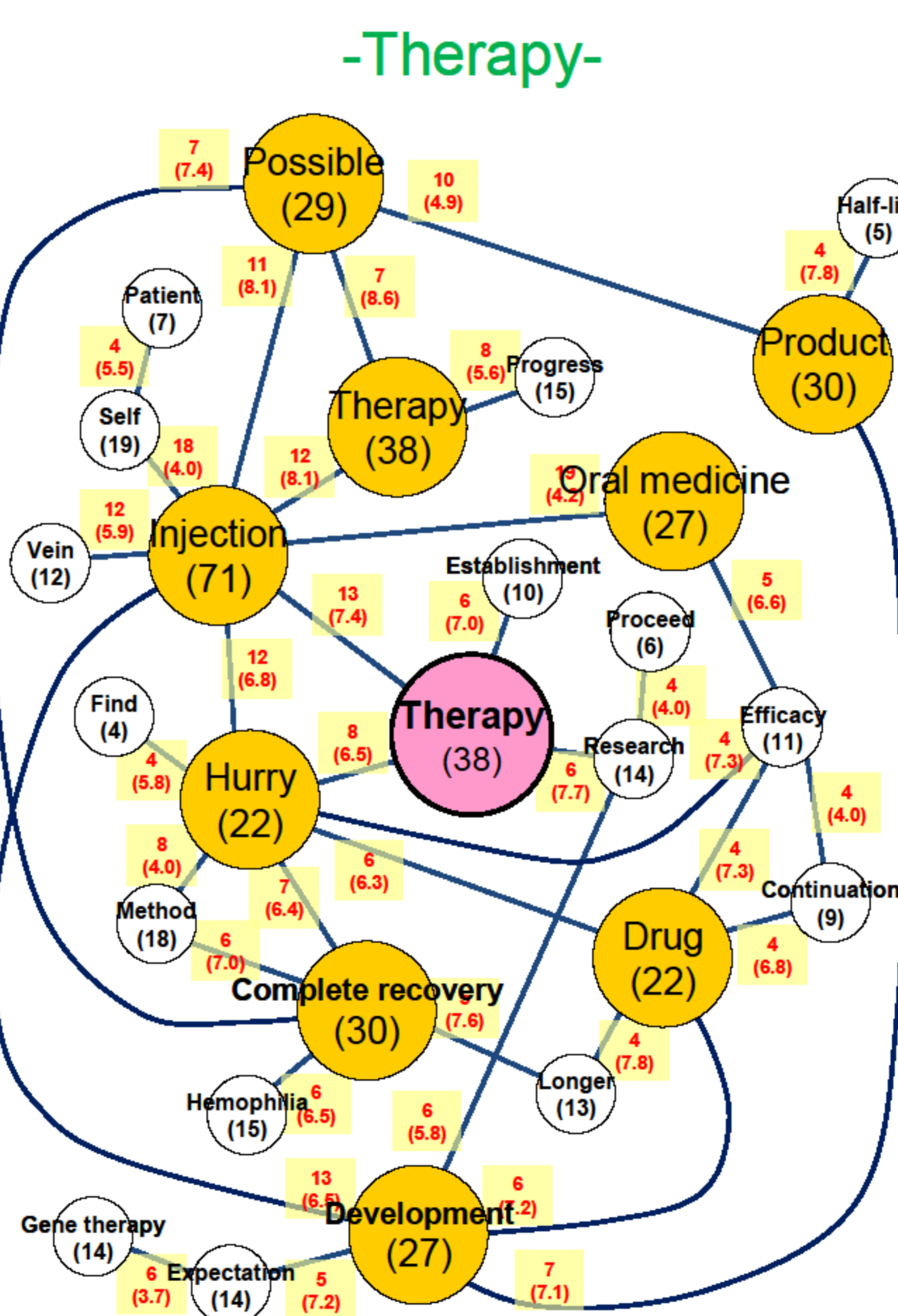
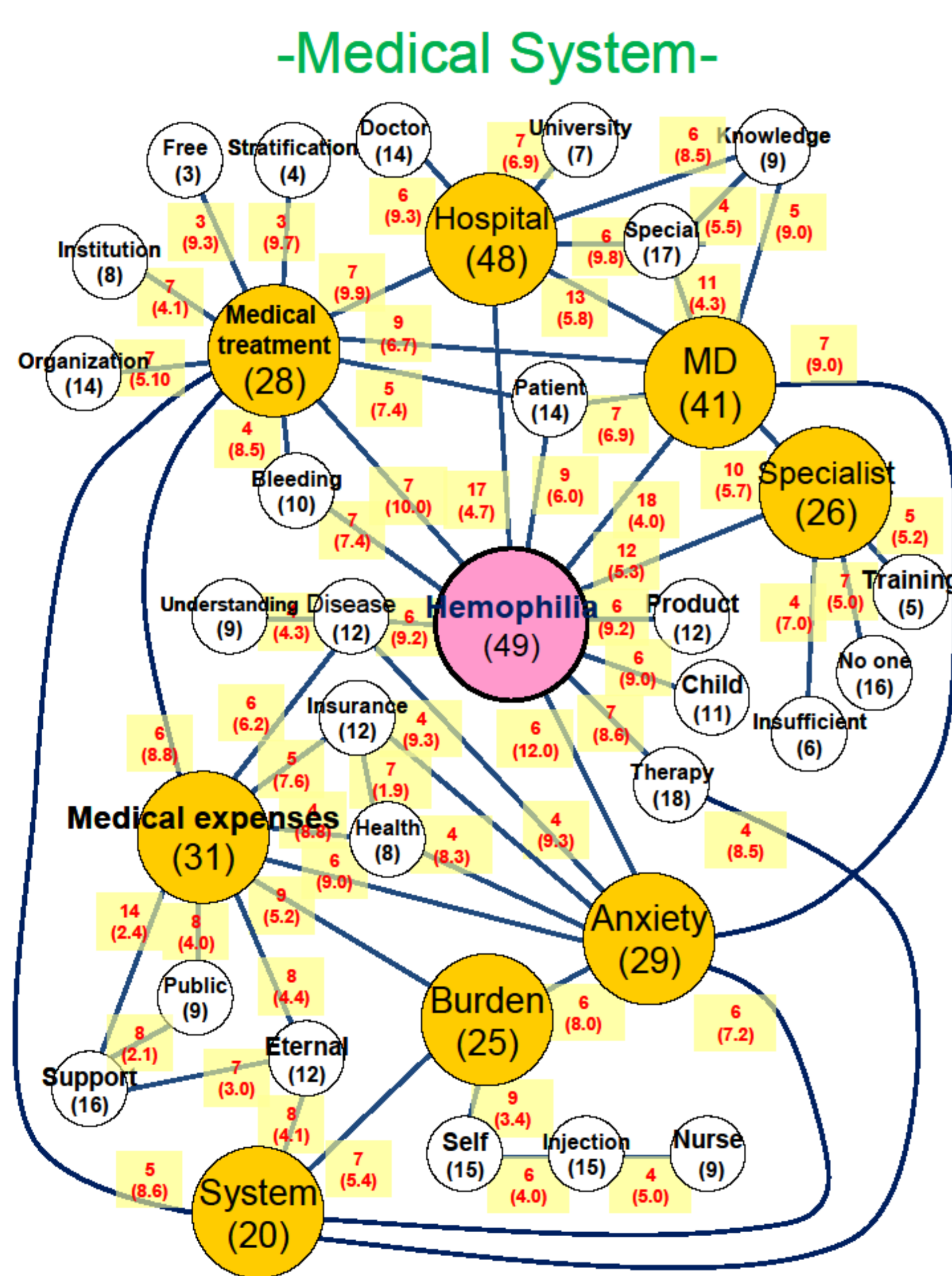
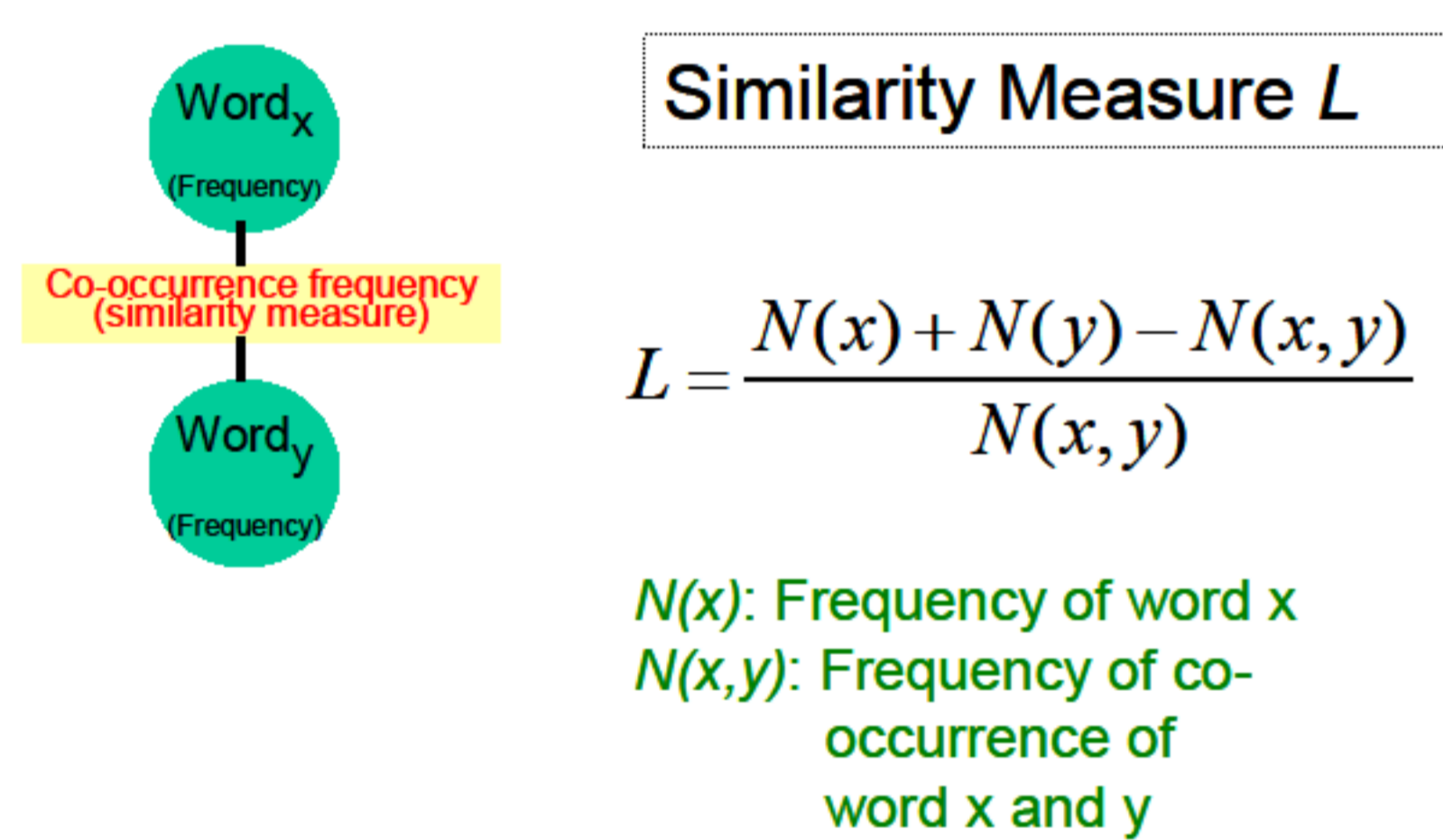
There was a low frequency of words related to liver disease or viral hepatitis, even in the description of disease conditions. In the 2-dimensional map of words, the location of the word "liver function" was one of the satellites of "joint", which had a much higher usage frequency.

Table 1. Number of words used in the descriptions

Theme	Number of description	Number of words	
		Frequency	Frequency per person
Medical system	204	6910	33.9
Therapy	208	5052	34.1
Disease condition	136	3935	24.3
Society and life	168	5724	34.1
Patients' group	138	3403	24.7
Others	99	3681	37.2
Total	953	28705	30.1

Table 2. Ranking of the frequency of words

Ranking	Word	Frequency						Total
		Medical system (N=204)	Therapy (N=208)	Disease condition (N=136)	Society and life (N=168)	Patients' group (N=138)	Others (N=99)	
1	Hemophilia	49	15	13	22	4	19	122
2	Injection	16	71	11	5	0	2	108
3	Anxiety	30	9	20	31	3	6	99
4	Possible	24	29	6	17	8	7	91
5	Hospital	48	9	2	7	6	3	75
6	Now	17	7	21	18	8	3	74
7	Therapy	18	38	10	1	2	4	73
8	Bleeding	11	7	34	16	1	4	73
9	Life	2	5	11	39	6	7	70
10	Patient	15	7	1	9	13	21	66
11	MD	41	8	2	2	5	7	65
12	Disease	12	5	5	27	6	7	62
13	Product	12	30	6	2	4	6	60
14	Present	21	11	8	10	5	4	59
15	Child	11	11	7	11	7	11	58
16	Joint	7	15	28	6	0	1	57
17	No one	16	4	4	7	10	3	44
18	Therapy	1	38	2	0	1	2	44
19	Worry	8	4	15	15	0	2	44
20	Treatment	29	3	1	2	4	4	43
21	Self	15	19	3	5	0	1	43
22	After	7	9	6	6	6	9	42
23	Drug	11	22	5	1	0	3	42
24	Person	5	2	1	14	11	8	41
25	Burden	25	9	3	2	2	0	41
26	Obstacle	6	7	15	11	0	1	40
27	Information	6	4	2	0	23	5	40
28	I	9	3	5	8	4	10	39
29	Medical expenses	31	1	0	3	1	1	37
30	Patients' group	1	0	0	0	33	1	35
31	Impossible	6	4	4	11	7	2	34
32	Complete recovery	2	30	1	0	0	1	34
33	Many	5	3	5	11	5	4	33
34	Necessary	10	5	4	6	6	2	33
35	Work	4	2	4	14	5	2	31
36	Expert	26	2	0	1	0	2	31
37	Condition	5	3	12	4	2	4	30
38	Development	1	27	0	1	0	0	29
39	Attendance	0	0	0	2	27	0	29
40	Society	2	1	1	19	0	6	29
41	Little	3	6	4	6	3	7	29
42	Myself	4	1	1	7	9	6	28
43	Rapid	0	22	5	0	1	0	28
44	Understanding	9	2	0	14	0	3	28
45	Oral medicine	0	27	0	0	0	0	27
46	System	20	1	0	6	0	0	27
47	Doctor	15	3	2	4	3	0	27
48	Insurance	12	0	0	13	0	2	27
49	Problem	7	2	1	7	7	2	26
50	Words with frequency ≤ 25 are abbreviated							



## Discussion

The patients' opinions based on the present mapping of words were as follows: They are anxious for continuation of the national support system. They expect the development of gene therapy and drugs that have a longer effect. Patients were less worried about viral hepatitis than the problems with their joints.

Summarizing free-answer descriptions is usually accompanied by bias arising from the analyst's attitude. Textual data analysis will be helpful in obtaining quantitative comprehension of the patients' opinions without such bias.

