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its effects on mental health in Japan:
A preliminary analysis using National Survey
on Social Security and People's Life 2017**

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Perceived availability of social support and its effects on mental health in Japan:
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Abstract

Accumulating evidence indicates a robust association between social support and population health. On the other hand, social support and its effects on mental health status in the overall population has not often been examined in Japan. In this analysis, we used data of the latest National Survey on Social Security and People's Life to explore availability of social support in various life events among different subgroups of population and to assess the association of the extent of social support and mental distress. As the results, the multilevel regression model indicates that the extent of social support independently affected mental health status. Support coming from families / relatives is overwhelmingly dominant in persons expected to rely on in all surveyed functional events including child care, nursing care, consulting about a crucial event, listening to complaint, sharing joys and sorrows of life, financial aid and casual helps in daily life. Compared to the male, the female are more likely to have someone to rely on. The preliminary findings have provided an overview of the extent of social support in the overall population and confirmed the association of the low level of social support and mental distress in Japan.

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Background

Social support is defined as “support accessible to an individual through social ties to other individuals, groups, and the larger community”¹. Besides the private domain such as family, friends, neighbors and coworkers, it may come from the public domain such as public aids. Theoretically, social support is composed of two essential dimensions: (1) a structural dimension, which refers to network size, composition and frequency of social interactions, and (2) a functional dimension, which refers to emotional, instrumental and tangible components of support such as love/ empathy, being listened to and understood, and practical care and assistance received in relevant specific life events^{2,3}.

Social support has been regarded as an important social determinant of health. There have been numerous empirical epidemiological evidence demonstrating its benefits to physical and mental health of the overall population as well as diverse subgroups such as women, the elderly, patients and migrants. In general, those living with family, actively involving social network, having emotional and instrumental support and being satisfied with the interactions with family and friends are likely to have lower mortality and morbidities and mental distresses⁴⁻⁷. Underlying the robust association are plausible biological and health behavioral mechanisms of social support in terms of alleviating genetic and environmental vulnerabilities, inspiring resilience to stresses and encouraging positive health-related behaviors such as healthy diet, exercise, smoking cessation, and healthcare seeking and adherence⁸⁻¹⁰. Like all other types of human social interaction, social support shows sociocultural diversities, which suggest the necessity to examine and to interpret this issue based on a specific context^{11,12}.

Japan has been experiencing unprecedented population aging and changing pattern of family structure, bringing profound influences to the safety net for people’s life at both private and public level. Meanwhile, social isolation accompanying with expanding inequalities has become a serious social problem. Those exposing to the high risk include the elderly people and single household. Paralleling with such a social concern arise from population aging, a relevantly large number of studies in particular focus on the elderly people and their caregiver in Japan, revealing the impact of social support on healthcare seeking, health and wellbeing outcomes and the gaps in terms of gender, financial status and family pattern¹³⁻¹⁸. On the other hand, social support and its effects on mental health status in the overall Japanese population has not often been examined. In the present analysis, we used data of the latest National Survey on Social Security and People’s Life 2017 to explore availability of social support in several life events among different subgroups of population and to assess its effect on mental health status. It is important to note that the hypothetical association is anchored to the demographical background.

Methods

The dataset of the survey consisted of the valid response from the valid response from 10,369 households and 19,800 adult individuals (aged 18 years or older) living in 300 municipalities. The study settings covered all 47 prefectures of the country. **Table 1** summarizes major demographic characteristics of the respondents.

Table 1. Demographic characteristics of the respondents

		n	%
Year of birth	1995-1999	846	4.27
	1990-1994	813	4.11
	1985-1989	1,038	5.24
	1980-1984	1,291	6.52
	1975-1979	1,549	7.82
	1970-1974	1,715	8.66
	1965-1969	1,648	8.32
	1960-1964	1,540	7.78
	1955-1959	1,664	8.40
	1950-1954	2,001	10.11
	1945-1949	1,958	9.89
	1940-1944	1,614	8.15
	1935-1939	1,068	5.39
1930-1934	678	3.42	
1929 or earlier	377	1.90	
Gender	Male	9,446	47.71
	Female	10,354	52.29
Marital status	Single	6,736	34.02
	Married	12,669	63.98
	Widowed	13,629	68.83
	Divorced	5,245	26.49
Educational background	Primary and middle school	2,395	12.46
	High school	7,931	41.26
	Junior college	2,016	10.49
	University and graduate school	4,819	25.07

	Others	2,062	10.73
Decile of household income	I	1,394	7.04
	II	1,488	7.52
	III	1,698	8.58
	IV	1,597	8.07
	V	1,860	9.39
	VI	1,849	9.34
	VII	1,947	9.83
	VIII	2,145	10.83
	IX	2,263	11.43
	X	2,105	10.63
Household structure	Single male	1,079	5.45
	Single female	1,233	6.23
	Childless couple	4,539	22.92
	Nuclear	3,889	19.64
	Single parent	284	1.43
	Three-generation	1,088	5.49
	Structure unclear	334	1.69
	Others	7,354	37.14

In the individual questionnaire, components related to availability of social support included the question “do you have someone (such as families, relatives and friends) you can count on to help you” for relevant life events and for those who had a positive answer, “who is the reliable person” for that event. These events were considered to reflect the functional dimension of social support, principally including 1) child care, 2) nursing care (except that for kids), 3) consulting about crucial events, 4) listening to complaints, 5) sharing joys and sorrows of life, 6) financial aid, and 7) casual helps in daily life. Then depending upon the extent of availability of reliable person(s) for these events, the responses were categorized into 1) reliable person(s) available in all 7 events, 2) reliable person(s) not available or no response in some events, and 3) reliable person(s) not available in any event. This newly created variable was regarded as the explanatory variable. Descriptive analyses were performed for the distribution of each functional event and reliable person(s) for it, as well as the extent of social support in different age groups, gender, types of household structure, marital status, and deciles of household income.

The outcome variable, mental distress, was measured by a self-administrated Kessler Psychological Distress Scale (K6), which score can be categorized into three levels: 1) no or mild mental distress with K& score < 5, 2) moderate mental distress with 5<= K6 score <13 and 3) serious mental distress with K& score >=13 ¹⁹. A multilevel mixed-effects logistic regression was performed to explore the relationship between the severity of mental distress and the extent of social support by adjusting major covariates, including year of birth, gender, household structure, marital status, deciles of household income, perceived financial status (five scaled options: 1. Very well off, 2. Well off, 3. Fair, 4. Badly off, 5. Very badly off) and perceived health status (five scaled options: 1. Excellent, 2. Good, 3. Fair, 4. Poor, 5. Bad). Intra-class cluster correlation at the municipality level was controlled. The model calculated adjusted odds ratios and the proportion of agreement / disagreement to the statement with a 95% confidence interval (95% CI) by using Stata 15.1.

Results

Availability of social support

Table 2 demonstrates the response of each functional event of social support. Those who have someone they can count on for child care, nursing care, consulting about crucial event, listening to complaints, sharing joys and sorrows of life, financial aid, and casual helps in daily life compose 58.13%, 56.66%, 81.85%, 81.84%, 84.94%, 55.59%, and 78.85% of all respondents, respectively. Compared to male, female are more likely to have reliable person(s) for all these life events.

Table 2. Functional events of social support by gender

Reliable person(s) available for		Male (%)	Female (%)	Overall (%)
Child care	Yes	5,305	6,204	11,509
		56.16	59.92	58.13
	No	2,925	2,704	5,629
		30.97	26.12	28.43
	No response	1,216	1,446	2,662
		12.87	13.97	13.44
Nursing care (except that for kids)	Yes	5,222	5,996	11,218
		55.28	57.91	56.66

	No	3,177	3,098	6,275
		33.63	29.92	31.69
	No response	1,047	1,260	2,307
		11.08	12.17	11.65
Consulting about crucial events	Yes	7,388	8,818	16,206
		78.21	85.17	81.85
	No	1,352	763	2,115
		14.31	7.37	10.68
	No response	706	773	1,479
		7.47	7.47	7.47
Listening to complaints	Yes	7,152	9,053	16,205
		75.71	87.43	81.84
	No	1,579	615	2,194
		16.72	5.94	11.08
	No response	715	686	1,401
		7.57	6.63	7.08
Sharing joys and sorrows of life	Yes	7,628	9,191	16,819
		80.75	88.77	84.94
	No	1,093	452	1,545
		11.57	4.37	7.8
	No response	725	711	1,436
		7.68	6.87	7.25
Financial aid	Yes	4,966	6,041	11,007
		52.57	58.34	55.59
	No	3,774	3,599	7,373
		39.95	34.76	37.24
	No response	706	714	1,420
		7.47	6.9	7.17
Casual helps in daily life	Yes	7,068	8,545	15,613
		74.83	82.53	78.85
	No	1,626	1,078	2,704

	17.21	10.41	13.66
No			
response	752	731	1,483
	7.96	7.06	7.49
Total	9,446	10,354	19,800
	100	100	100

Among the reliable person(s) who are expected to give a favor, the option of families / relatives is overwhelmingly dominant, accounting for more than 90% of those who answered “yes” for availability of reliable person(s) in all these event (**Table 3**). In **Table 3**, the proportion of relying on friends in some events, such as consulting about a crucial events, listening to complaints, sharing joys and sorrows of life and casual helps in daily life, is also obvious.

Table 4 shows the extent of social support in different age groups and by gender. In general, those who have reliable person(s) in all events account for 29.44%, 27.44% and 31.27% of the overall, male and female population, respectively. Those born during 1955-1989 are more likely to have higher proportion of reliable person(s) available in all events. On the other hand, those who don’t have reliable person(s) in any event compose 3.05%, 4.77% and 1.48% of the overall, male and female population, respectively.

Married respondents are more likely to acquire necessary supports in all events (**Table 5**). Regarding annual household income, a tendency that the proportion of reliable persons available in all events is gradually increasing in higher deciles of household income is observed (**Table 6**).

The effect of the extent of social support on mental health status

Table 7 summarizes the outputs of the multilevel regression model to explore the effect of the extent of social support on mental health. Those born prior to 1979, female, those with excellent subjective health, those married, and those having reliable person(s) for all the events are less likely to suffer from mental distress, while those perceiving to be badly or very badly off and those not having reliable person(s) for any event are on the opposite. The model does not identify a significant effect of annual household income and educational background on mental health status.

Table 3. Reliable person(s) for each functional event of social support

	Familie(s) / relative(s)	Friend(s)	Neighbor(s)	Coworker(s)	Local welfare commissioner / social worker	Others
Child care	98.7%	9.5%	3.0%	1.3%	1.1%	1.0%
Nursing care (except that for kids)	96.5%	5.3%	1.9%	0.9%	4.3%	1.6%
Consulting about a crucial event	94.4%	34.7%	1.4%	8.7%	1.0%	1.7%
Listening to complaints	84.9%	61.0%	5.4%	20.9%	0.7%	2.0%
Sharing joys and sorrows of life	92.4%	55.2%	4.8%	14.5%	0.4%	1.6%
Financial aid	98.1%	6.1%	0.3%	1.3%	0.3%	0.7%
Casual helps in daily life	92.5%	42.3%	17.1%	12.9%	0.9%	1.3%

Table 4. The extent of social support in different age groups

Year of birth	Overall (%)					Male (%)					Female (%)				
	Reliable persons available in all 7 events	Reliable persons not available in any event	Reliable persons not available / no response in some events	No response in any event	Total	Reliable persons available in all 7 events	Reliable persons not available in any event	Reliable persons not available / no response in some events	No response in any event	Total	Reliable persons available in all 7 events	Reliable persons not available in any event	Reliable person not available / no response in some events	No response in any event	Total
	1995- 1999	194 22.93	19 2.25	556 65.72	77 9.1	846 100	80 20.51	16 4.1	259 66.41	35 8.97	390 100	114 25	3 0.66	297 65.13	42 9.21

1990-															
1994	243	24	510	36	813	109	18	248	21	396	134	6	262	15	417
	29.89	2.95	62.73	4.43	100	27.53	4.55	62.63	5.3	100	32.13	1.44	62.83	3.6	100
1985-															
1989	376	32	588	42	1,038	157	24	298	25	504	219	8	290	17	534
	36.22	3.08	56.65	4.05	100	31.15	4.76	59.13	4.96	100	41.01	1.5	54.31	3.18	100
1980-															
1984	481	30	727	53	1,291	209	26	366	36	637	272	4	361	17	654
	37.26	2.32	56.31	4.11	100	32.81	4.08	57.46	5.65	100	41.59	0.61	55.2	2.6	100
1975-															
1979	606	32	846	65	1,549	293	23	431	31	778	313	9	415	34	771
	39.12	2.07	54.62	4.2	100	37.66	2.96	55.4	3.98	100	40.6	1.17	53.83	4.41	100
1970-															
1974	611	44	1,003	57	1,715	261	37	485	31	814	350	7	518	26	901
	35.63	2.57	58.48	3.32	100	32.06	4.55	59.58	3.81	100	38.85	0.78	57.49	2.89	100
1965-															
1969	570	60	963	55	1,648	271	46	478	36	831	299	14	485	19	817
	34.59	3.64	58.43	3.34	100	32.61	5.54	57.52	4.33	100	36.6	1.71	59.36	2.33	100
1960-															
1964	576	51	867	46	1,540	240	37	417	26	720	336	14	450	20	820
	37.4	3.31	56.3	2.99	100	33.33	5.14	57.92	3.61	100	40.98	1.71	54.88	2.44	100
1955-															
1959	553	53	988	70	1,664	243	43	466	36	788	310	10	522	34	876

	33.23	3.19	59.38	4.21	100	30.84	5.46	59.14	4.57	100	35.39	1.14	59.59	3.88	100	
1950-																
1954	509	68	1,333	91	2,001	223	50	652	42	967	286	18	681	49	1,034	
	25.44	3.4	66.62	4.55	100	23.06	5.17	67.43	4.34	100	27.66	1.74	65.86	4.74	100	
1945-																
1949	400	93	1,363	102	1,958	190	71	629	54	944	210	22	734	48	1,014	
	20.43	4.75	69.61	5.21	100	20.13	7.52	66.63	5.72	100	20.71	2.17	72.39	4.73	100	
1940-																
1944	310	48	1,134	122	1,614	143	32	515	62	752	167	16	619	60	862	
	19.21	2.97	70.26	7.56	100	19.02	4.26	68.48	8.24	100	19.37	1.86	71.81	6.96	100	
1935-																
1939	186	32	759	91	1,068	90	20	355	44	509	96	12	404	47	559	
	17.42	3	71.07	8.52	100	17.68	3.93	69.74	8.64	100	17.17	2.15	72.27	8.41	100	
1930-																
1934	132	16	448	82	678	57	8	186	25	276	75	8	262	57	402	
	19.47	2.36	66.08	12.09	100	20.65	2.9	67.39	9.06	100	18.66	1.99	65.17	14.18	100	
1929 or earlier	83	2	244	48	377	26	0	93	21	140	57	2	151	27	237	
	22.02	0.53	64.72	12.73	100	18.57	0	66.43	15	100	24.05	0.84	63.71	11.39	100	
Total	5,830	604	12,329	1,037	19,800	2,592	451	5,878	525	9,446	3,238	153	6,451	512	10,354	
	29.44	3.05	62.27	5.24	100	27.44	4.77	62.23	5.56	100	31.27	1.48	62.3	4.94	100	

Table 5. Marital status and the extent of social support

Marital status	Reliable person(s) available in all 7 events	Reliable person(s) not available in any event	Reliable person(s) not available / no response in some events	No response in any event	Total
Single	690 17.02	238 5.87	2,902 71.57	225 5.55	4,055 100
Married	4,557 35.97	250 1.97	7,394 58.36	468 3.69	12,669 100
Widowed	315 20.15	38 2.43	1,098 70.25	112 7.17	1,563 100
Divorced	226 20.21	69 6.17	767 68.6	56 5.01	1,118 100

Table 6. Annual household income and the extent of social support

Decile of household income	Reliable person(s) available in all 7 events	Reliable person(s) not available in any event	Reliable person(s) not available / no response in some events	No response in any event	Total
I	268 19.23	96 6.89	883 63.34	147 10.55	1,394 100
II	335 22.51	58 3.9	990 66.53	105 7.06	1,488 100
III	408 24.03	60 3.53	1,140 67.14	90 5.3	1,698 100
IV	461 28.87	47 2.94	1,014 63.49	75 4.7	1,597 100
V	518 27.85	52 2.8	1,238 66.56	52 2.8	1,860 100
VI	619 33.48	35 1.89	1,152 62.3	43 2.33	1,849 100
VII	599 30.77	48 2.47	1,247 64.05	53 2.72	1,947 100
VIII	743 34.64	54 2.52	1,290 60.14	58 2.7	2,145 100

IX	823	67	1,331	42	2,263
	36.37	2.96	58.82	1.86	100
X	783	41	1,233	48	2,105
	37.2	1.95	58.57	2.28	100

Table 7. Factors affecting mental health status

Mental distress measured by K6		Odds Ratio	95% CI		<i>p</i>
Year of birth	1995-1999	ref.			
	1990-1994	1.240	0.989	1.554	0.062
	1985-1989	1.115	0.895	1.389	0.334
	1980-1984	0.875	0.706	1.085	0.224
	1975-1979	0.785	0.634	0.972	0.026
	1970-1974	0.794	0.641	0.983	0.035
	1965-1969	0.635	0.511	0.789	<0.000
	1960-1964	0.666	0.534	0.831	<0.000
	1955-1959	0.481	0.385	0.600	<0.000
	1950-1954	0.441	0.354	0.549	<0.000
	1945-1949	0.369	0.295	0.462	<0.000
	1940-1944	0.380	0.300	0.480	<0.000
	1935-1939	0.439	0.340	0.567	<0.000
	1930-1934	0.457	0.342	0.610	<0.000
	1929 or earlier	0.526	0.369	0.748	<0.000
Gender	Male	ref.			
	Female	1.220	1.138	1.309	<0.000
Marital status	Single	ref.			
	Married	0.853	0.767	0.949	0.003
	Widowed	0.993	0.832	1.185	0.937
	Divorced	0.817	0.687	0.971	0.022
Decile of household income	I	ref.			
	II	1.000	0.839	1.191	0.999
	III	0.983	0.830	1.163	0.838
	IV	0.900	0.760	1.068	0.227
	V	1.008	0.856	1.189	0.92
	VI	1.075	0.912	1.268	0.389
	VII	0.924	0.784	1.089	0.348
	VIII	0.916	0.779	1.076	0.286

	IX	0.921	0.784	1.082	0.317
	X	0.858	0.725	1.015	0.074
Perceived financial status	Very well off	ref.			
	Well off	1.021	0.787	1.323	0.878
	Fair	1.053	0.825	1.343	0.68
	Badly off	1.820	1.416	2.338	<0.000
	Very badly off	2.561	1.948	3.367	<0.000
Educational background	Middle school and below	ref.			
	High school	0.906	0.803	1.022	0.107
	Junior college	1.055	0.904	1.230	0.498
	University / graduate school	0.878	0.767	1.006	0.06
	Others	0.960	0.824	1.119	0.599
Perceived health status	Excellent	ref.			
	Good	2.331	2.112	2.572	<0.000
	Fair	3.236	2.948	3.553	<0.000
	Poor	7.896	6.947	8.973	<0.000
	Bad	14.593	11.036	19.296	<0.000
Social support	Reliable person(s) not available / no response in some events	ref.			
	Reliable person(s) available in all 7 events	0.879	0.817	0.946	0.001
	Reliable person(s) not available in any event	1.271	1.041	1.553	0.019

Interpretations

The preliminary findings have provided an overview of the extent of social support in the overall population and confirmed the association of social support and mental health in Japan. By a multilevel model, the effect of the low level of social support on mental distress is confirmed by controlling demographical and socioeconomic factors. To our knowledge, this is the latest analysis with a good sampling frame and well assessed demographic and socioeconomic status of the overall population.

It is identified that support coming from families / relatives is overwhelmingly dominant in persons expected to rely on in all surveyed functional events. This result

highlights a potential concern of weakened family functions in providing support and care with changing shrinking family size and family pattern, as the average family size is projected to decrease from 2.33 persons per household to 2.08 persons, and the proportion of single households among those headed by those 65 years and older will increase from 36.0% to 44.2% between 2015 and 2040 ²⁰. To this end, exerting functions of social support and social safety net at the public domain is expected to compensate for the weakened support and care at the private domain in the near future.

The analysis also show a gender difference in the perceived social support. Compared to the male, the female are more likely to have someone to rely on. It is consistent with previous findings suggesting that femininity was associated with seeking and receiving emotional support and promoting a more social form of wellbeing, which could be explained by socialization experiences and social roles of gender ²¹⁻²³. It entails the adaptation of the public services for the strengthening of variable support needs to the gender difference.

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