US 20020123908A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2002/0123908 A1

Ando et al. (43) Pub. Date: Sep. 5, 2002

(54) HEALTH CARE SYSTEM

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(21) Appl. No.: **10/078,307**

(22) Filed: **Feb. 19, 2002**

(30) **Foreign Application Priority Data**

Feb. 16, 2001 (JP) 2001-40713

Publication Classification

(51) **Int. Cl.**[7] **G06F 17/60**

(52) **U.S. Cl.** **705/2**

(57) **ABSTRACT**

A health care system comprises plural subscriber terminal devices, a data management center, and a communication line connecting the subscriber terminal devices to the data management center, wherein each subscriber terminal device comprises an input means for inputting health data of the corresponding subscriber, a storage means for holding the inputted health data, a first communication means for performing data communication with the data management center, a display means for displaying the health data and information from the data management center, and an operation means with which the subscriber performs a series of operations; and the data management center comprises a second communication means for performing data communication with each subscriber terminal device, a storage means for holding health data transmitted from each subscriber terminal device, a group decision means for deciding a group to which each subscriber belongs on the basis of plural pieces of health data obtained from the storage means, and an advising means for providing each subscriber terminal device with plural advice candidates which are common to subscribers in the group to which the subscriber terminal device belongs, through the second communication means. Therefore, the health care system can encourage each subscriber to continuously measure health data and send the health data to the external data management center.

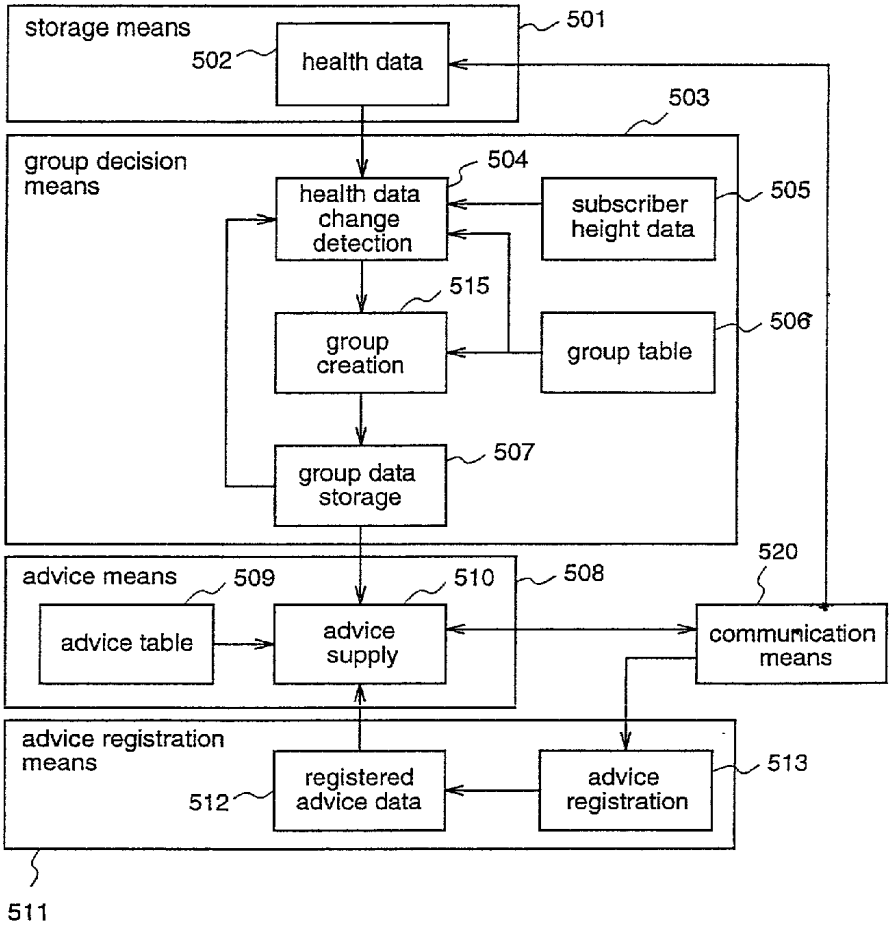


Fig.1

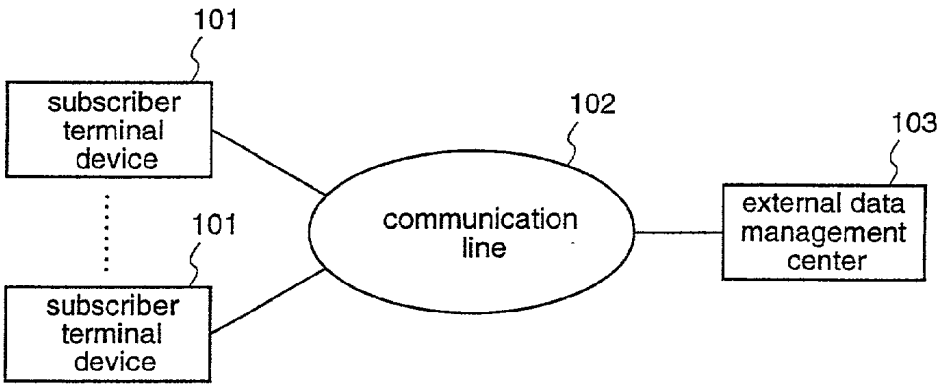

101
subscriber terminal device
101
subscriber terminal device
102
communication line
103
external data management center

Fig.2

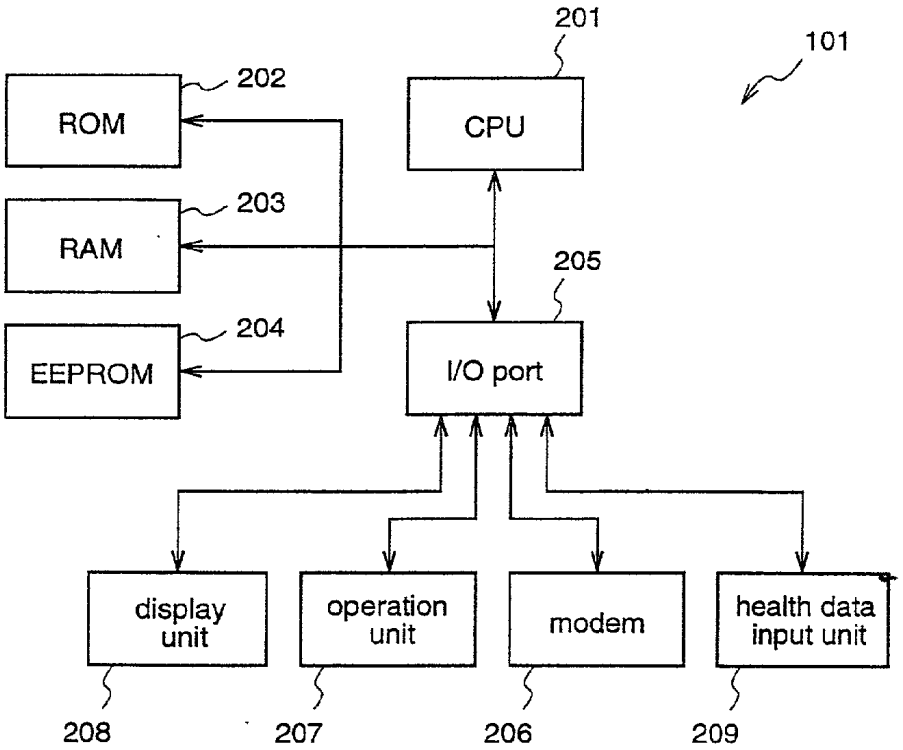
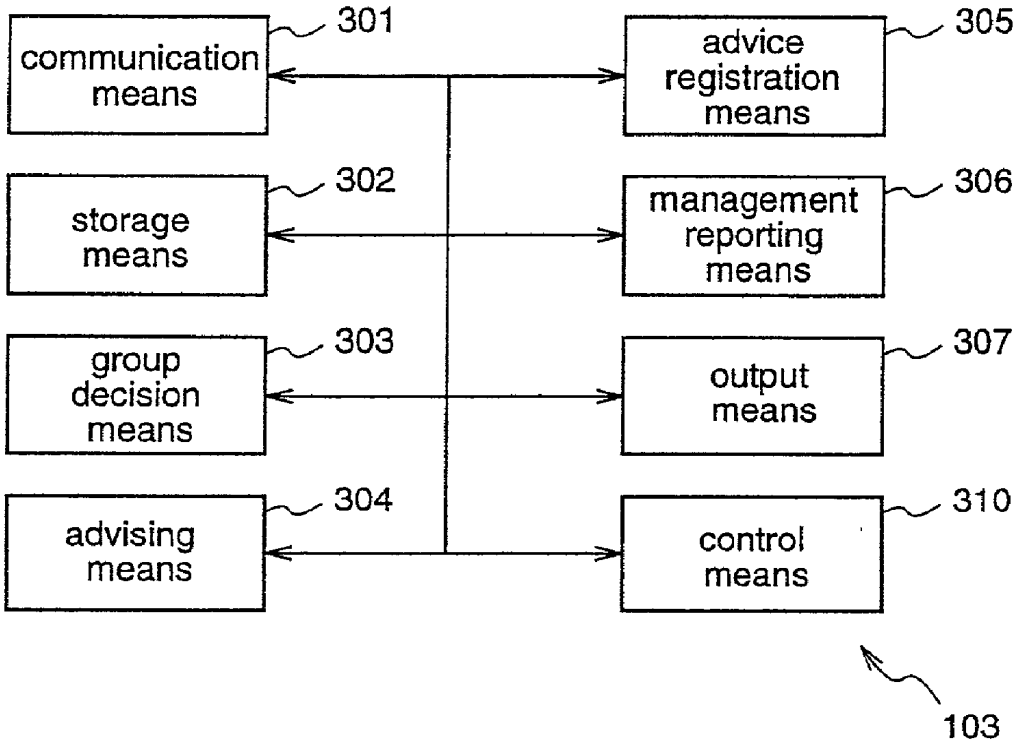

201
101
202
ROM
CPU
203
RAM
205
204
EEPROM
I/O port
display unit
operation unit
modem
health data input unit
208
207
206
209

Fig.3


communication means
301
storage means
302
group decision means
303
advising means
304
advice registration means
305
management reporting means
306
output means
307
control means
310
103

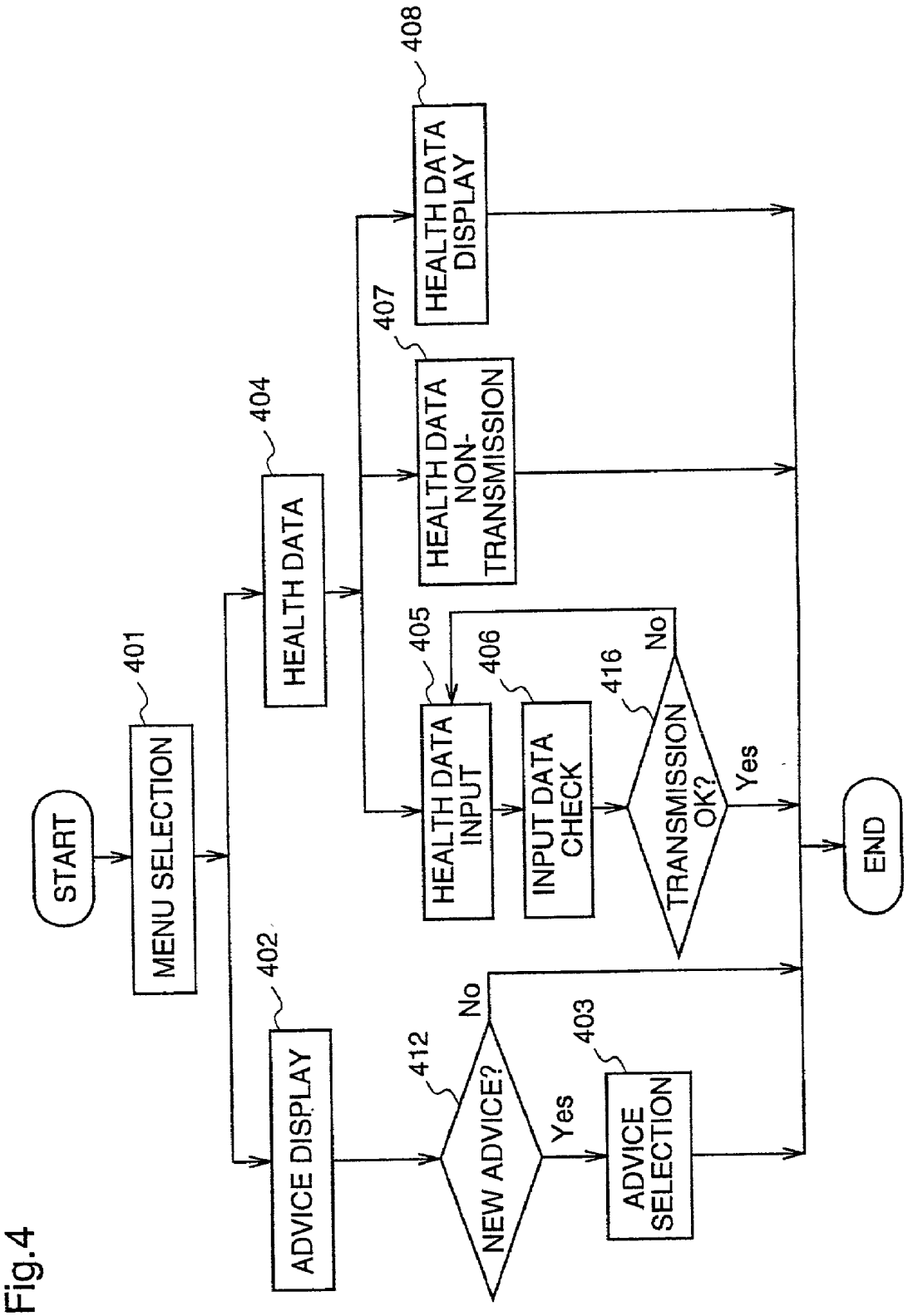

START
MENU SELECTION
401
HEALTH DATA
404
HEALTH DATA DISPLAY
408
HEALTH DATA NON-TRANSMISSION
407
HEALTH DATA INPUT
405
INPUT DATA CHECK
406
TRANSMISSION OK?
416
No
Yes
END
ADVICE DISPLAY
402
NEW ADVICE?
412
No
Yes
ADVICE SELECTION
403

Fig.4

Fig.5

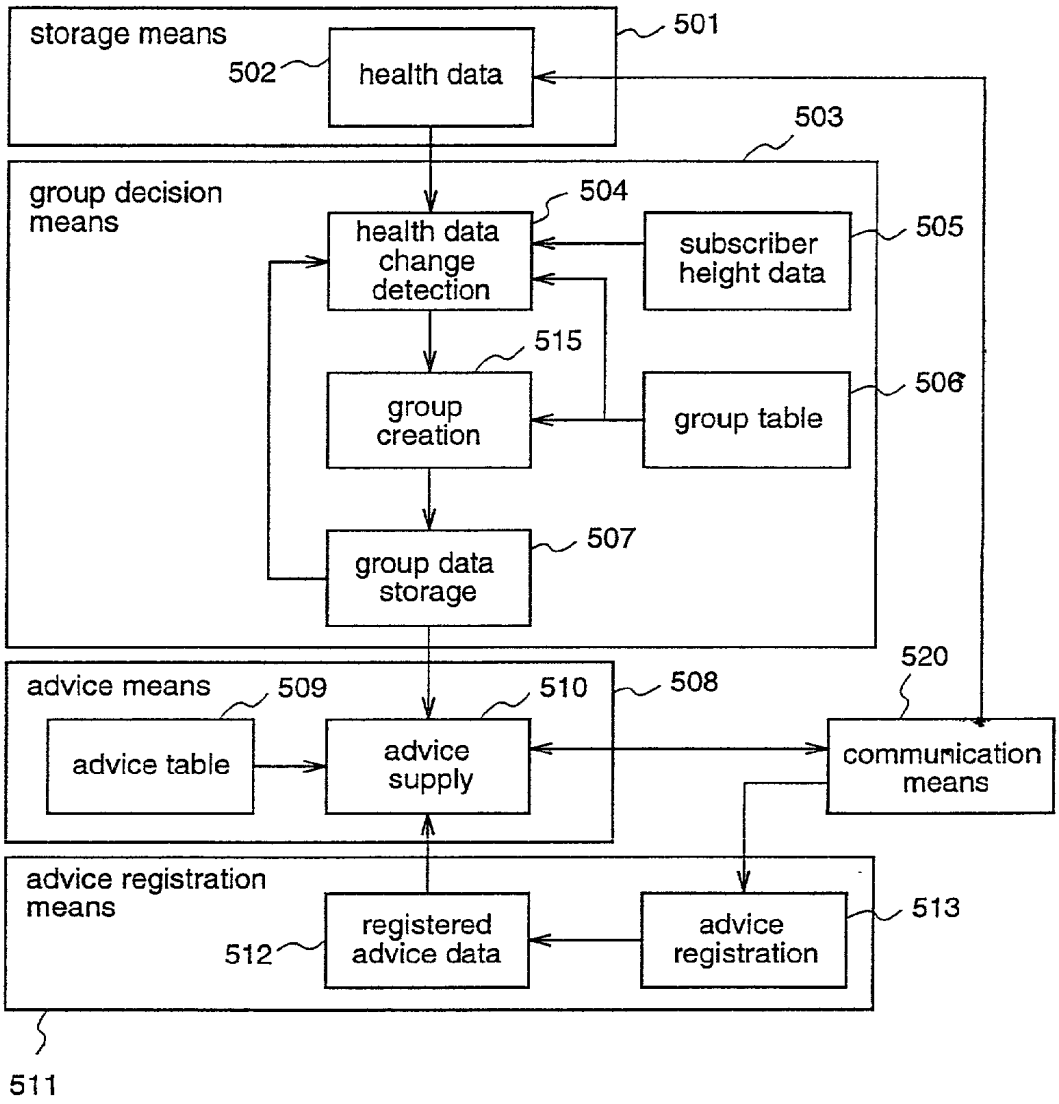
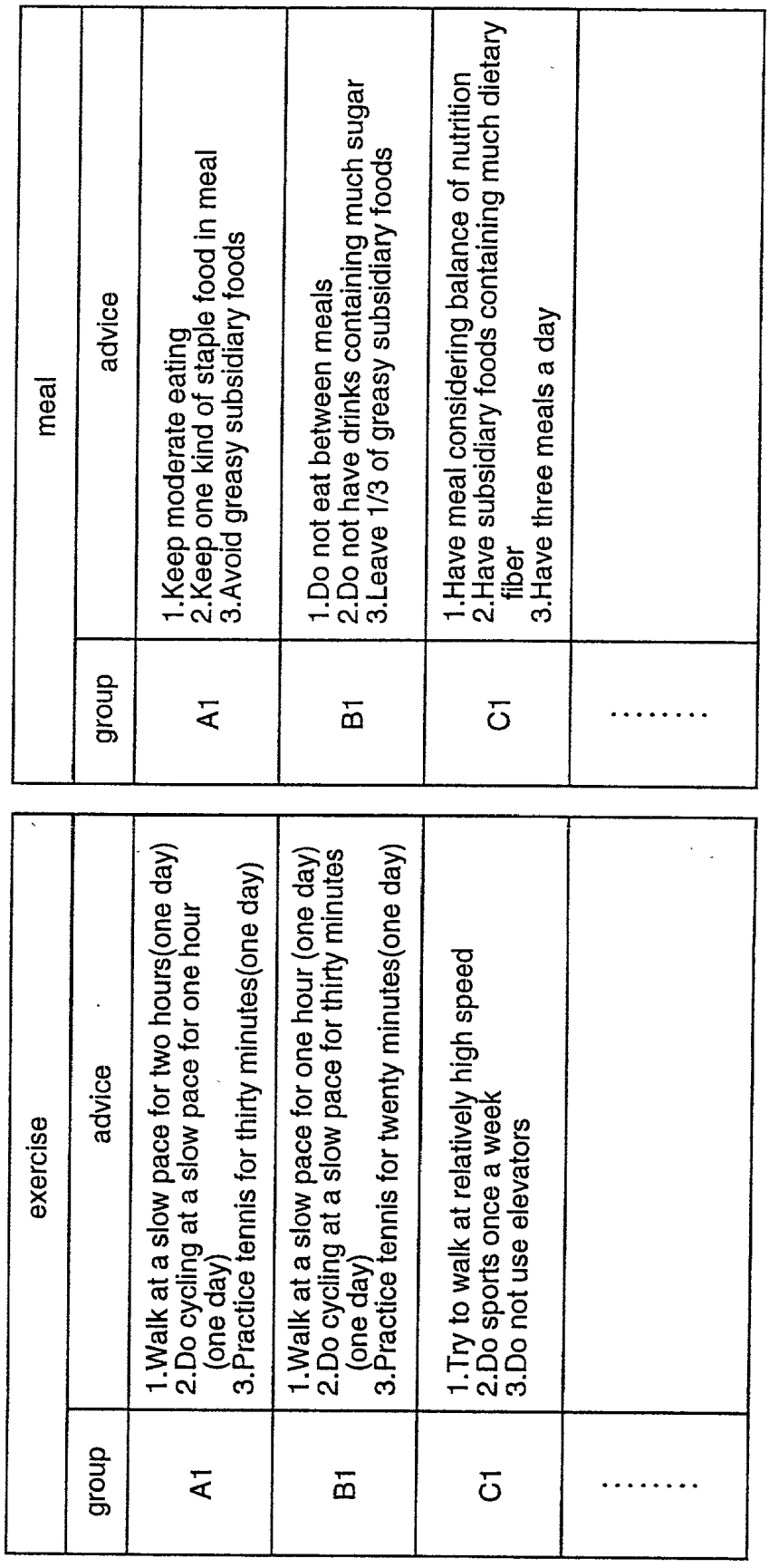

storage means
501
502
health data
503
group decision means
504
health data change detection
subscriber height data
505
515
group creation
group table
506
group data storage
507
advice means
509
510
508
520
advice table
advice supply
communication means
advice registration means
registered advice data
advice registration
513
512
511

Fig.6

		fasting blood sugar level			
		140mg/dl≦	120-139mg/dl	100-119mg/dl	100mg/dl<
body mass index	24<	A1	A2	A3	A4
	20≦, 24≧	B1	B2	B3	B4
	20>	C1	C2	C3	C4

Fig.7



exercise	
group	advice
A1	1.Walk at a slow pace for two hours(one day) 2.Do cycling at a slow pace for one hour (one day) 3.Practice tennis for thirty minutes(one day)
B1	1.Walk at a slow pace for one hour (one day) 2.Do cycling at a slow pace for thirty minutes (one day) 3.Practice tennis for twenty minutes(one day)
C1	1.Try to walk at relatively high speed 2.Do sports once a week 3.Do not use elevators
.....	

meal	
group	advice
A1	1.Keep moderate eating 2.Keep one kind of staple food in meal 3.Avoid greasy subsidiary foods
B1	1.Do not eat between meals 2.Do not have drinks containing much sugar 3.Leave 1/3 of greasy subsidiary foods
C1	1.Have meal considering balance of nutrition 2.Have subsidiary foods containing much dietary fiber 3.Have three meals a day
.....	

Fig.8

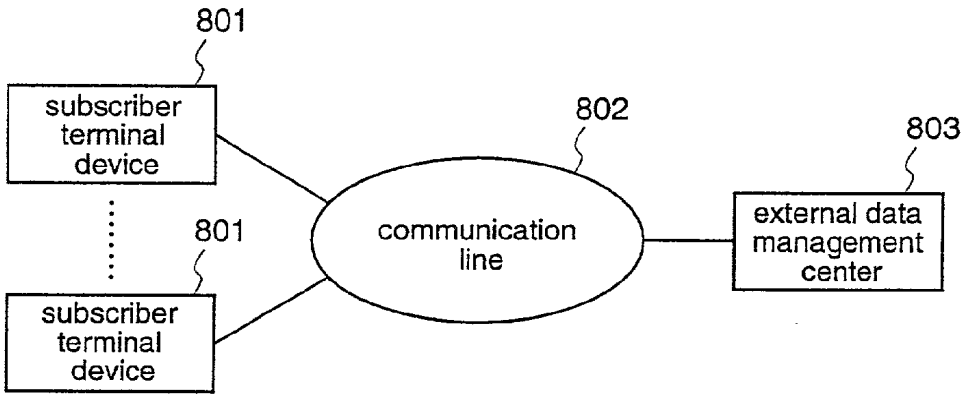

801
subscriber terminal device
801
subscriber terminal device
802
communication line
803
external data management center

Fig.9

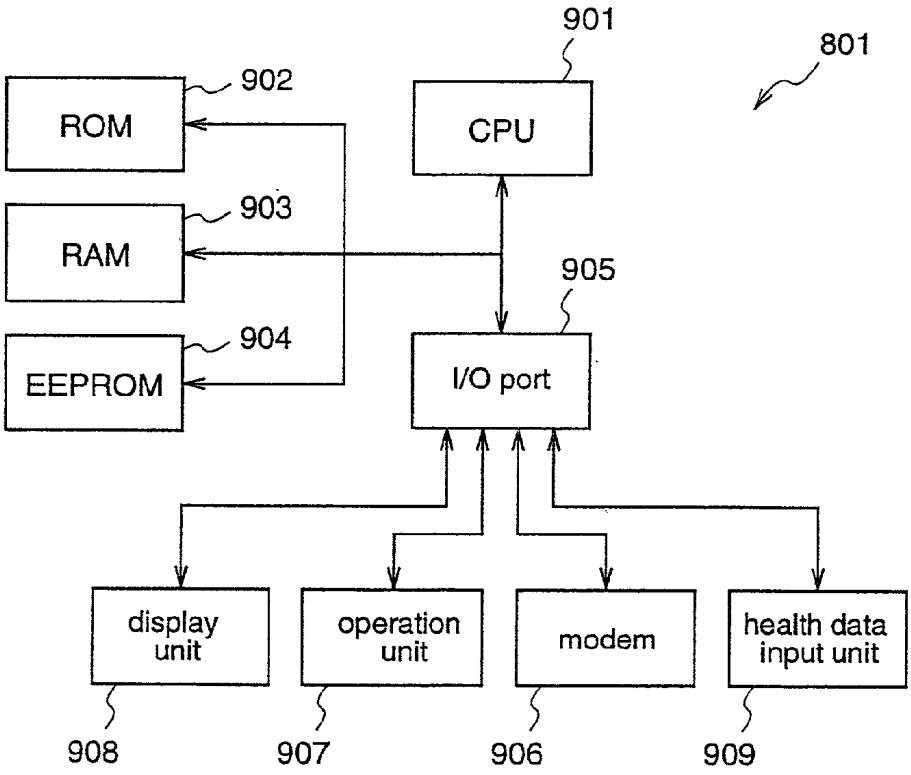

901
801
902
ROM
CPU
903
RAM
905
904
EEPROM
I/O port
display unit
operation unit
modem
health data input unit
908
907
906
909

Fig.10

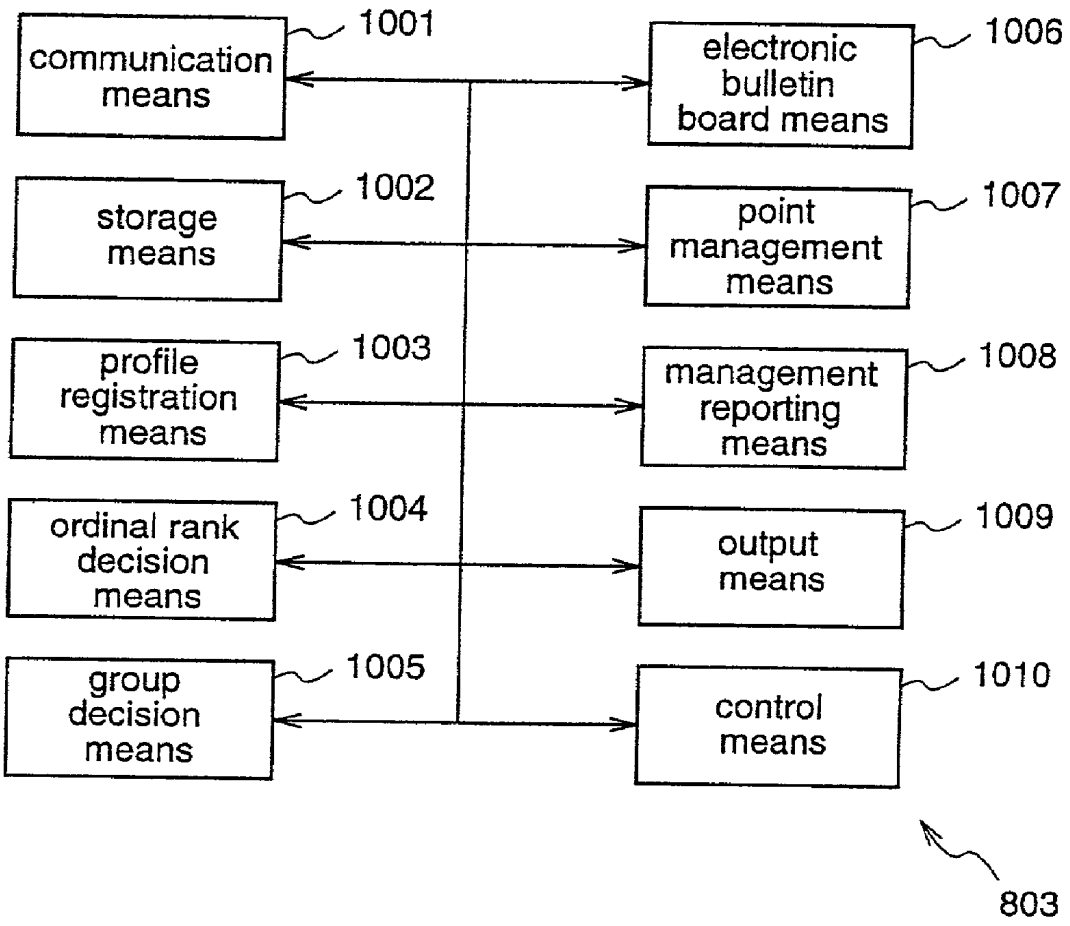

communication means
1001
storage means
1002
profile registration means
1003
ordinal rank decision means
1004
group decision means
1005
electronic bulletin board means
1006
point management means
1007
management reporting means
1008
output means
1009
control means
1010
803

Fig.11

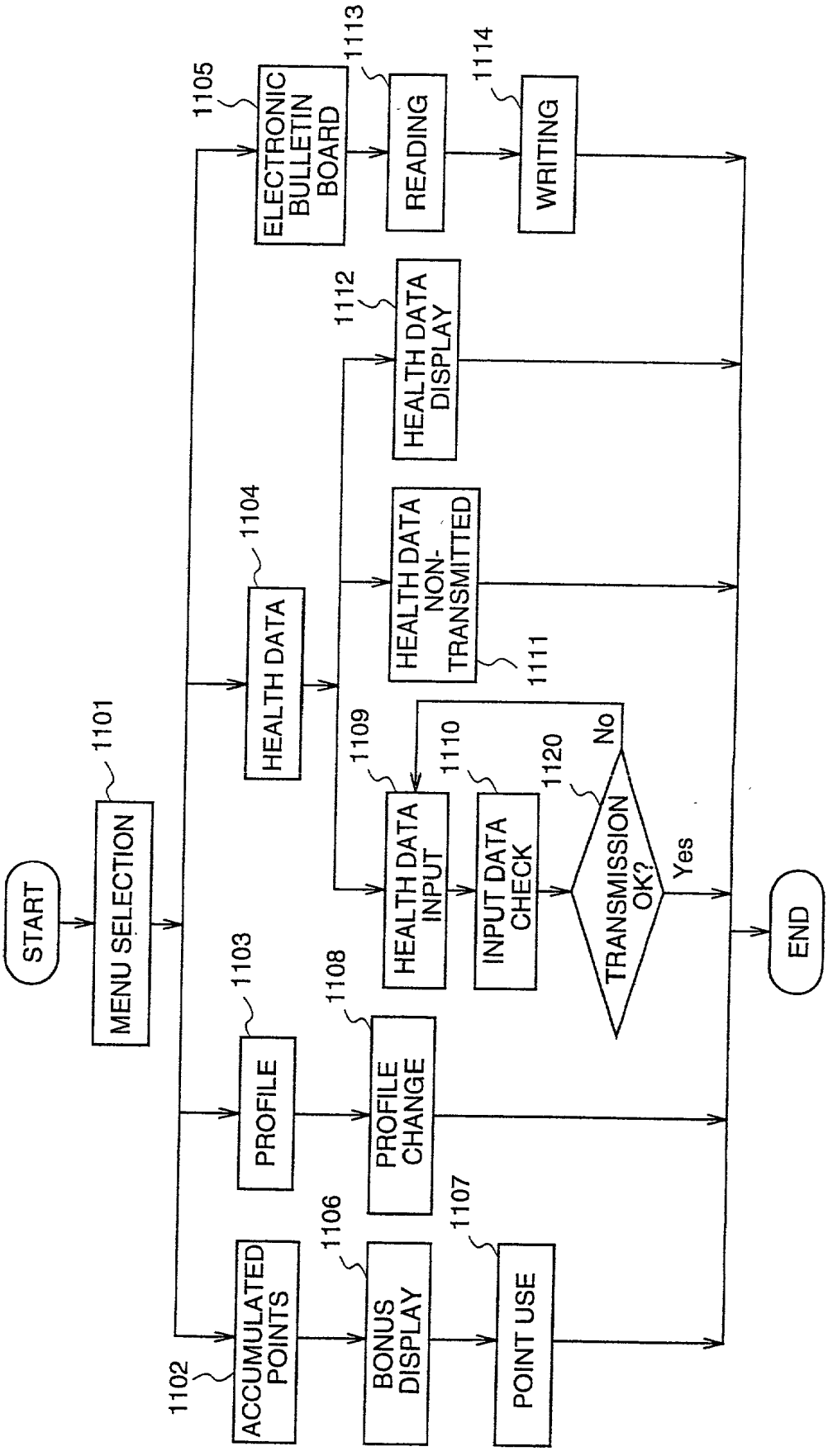

START
MENU SELECTION
1101
ACCUMULATED POINTS
1102
PROFILE
1103
HEALTH DATA
1104
ELECTRONIC BULLETIN BOARD
1105
BONUS DISPLAY
1106
POINT USE
1107
PROFILE CHANGE
1108
HEALTH DATA INPUT
1109
INPUT DATA CHECK
1110
HEALTH DATA NON-TRANSMITTED
1111
HEALTH DATA DISPLAY
1112
READING
1113
WRITING
1114
TRANSMISSION OK?
1120
No
Yes
END

Fig.12

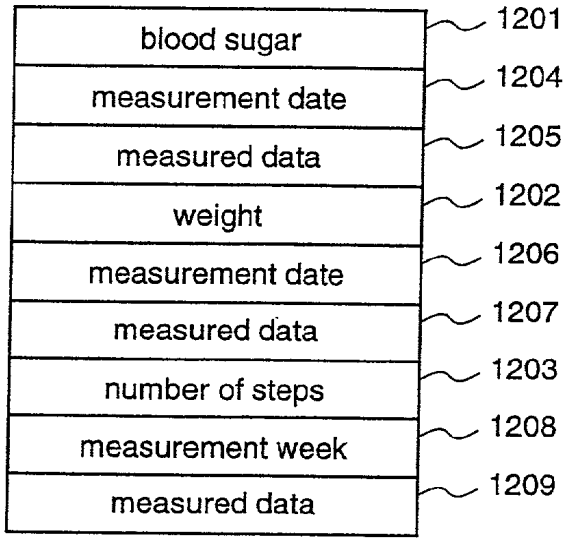
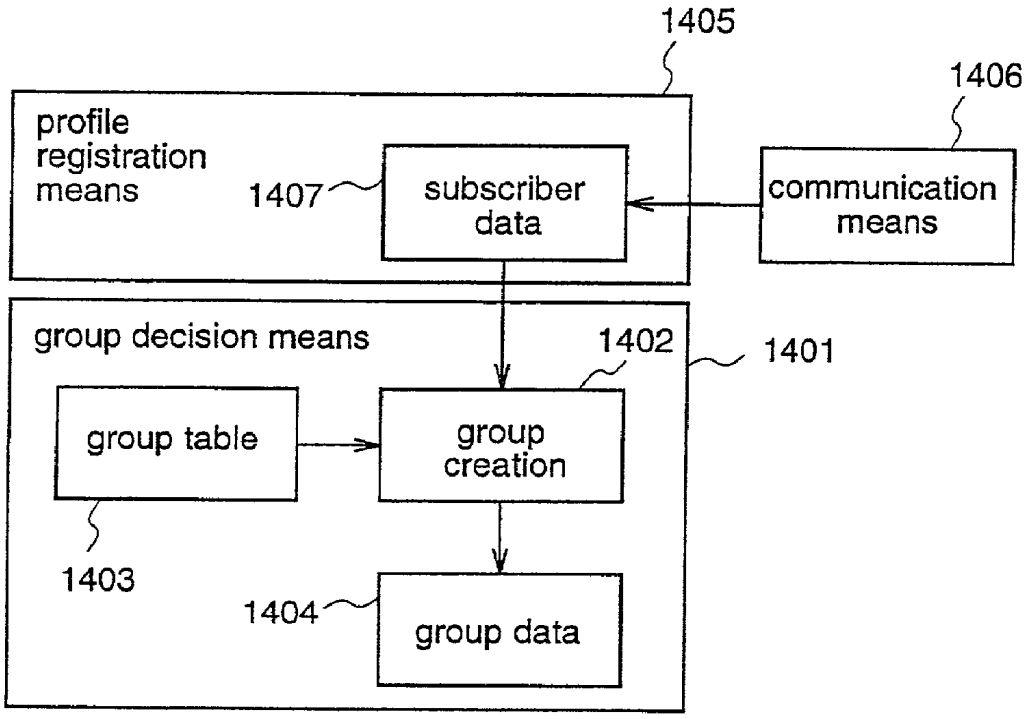


Fig.13

1300	member ID	◇◇◇
1301	name	○○○
1302	address	XXXX
1303	telephone number	△△△
1304	sex	male
1305	hobby	fishing
1306	living alone/with family	with family
1308	initial blood sugar level(mg/dl)	170
1309	target blood sugar level(mg/dl)	120
1310	initial weight(kg)	74
1311	target weight(kg)	69
1312	height(cm)	178
1313	standard weight(kg)	69.7
1314	target number of steps(steps/day)	10,000

Fig.14


1405
1406
profile registration means
1407
subscriber data
communication means
group decision means
1402
1401
group table
group creation
1403
1404
group data

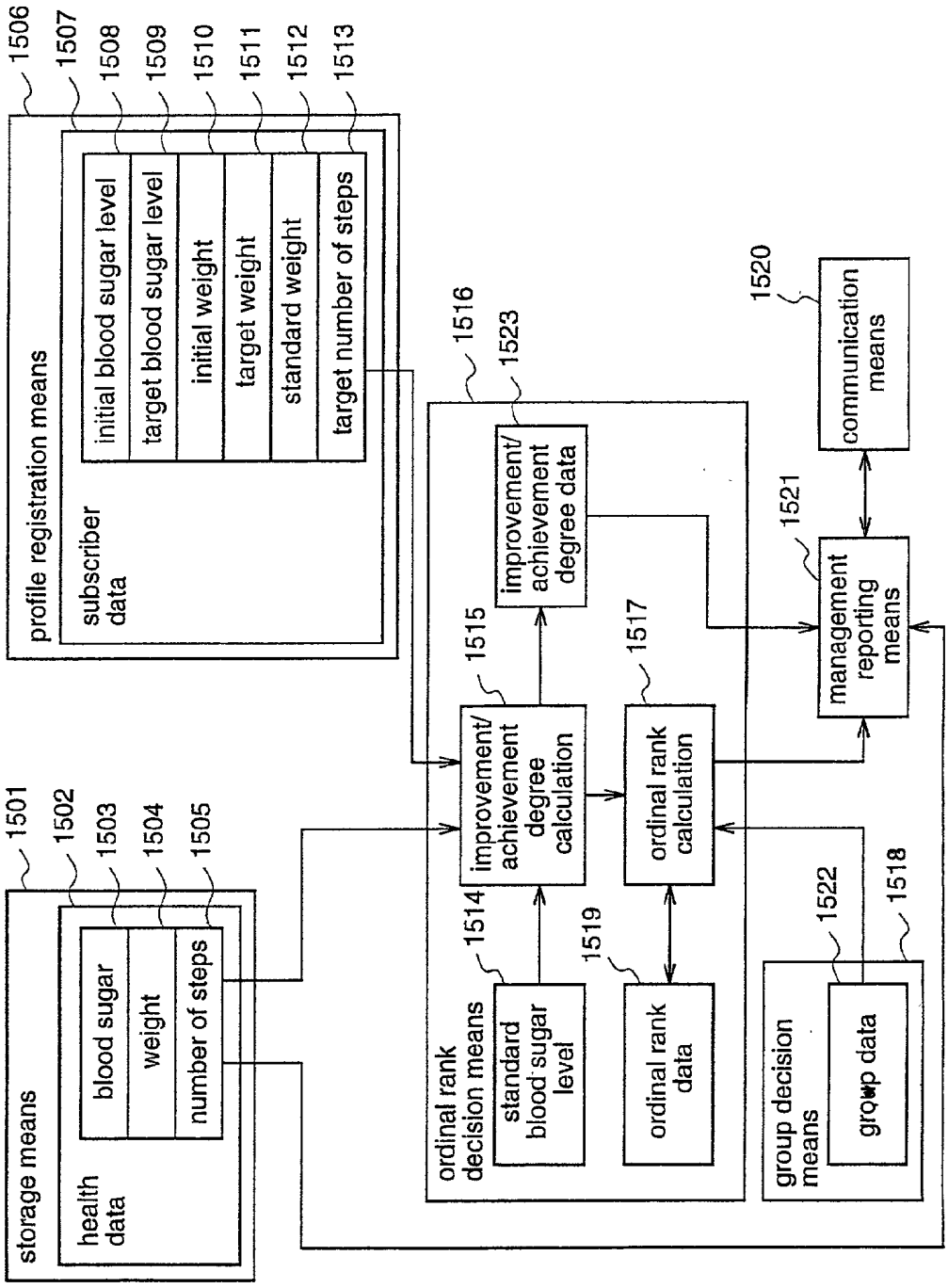
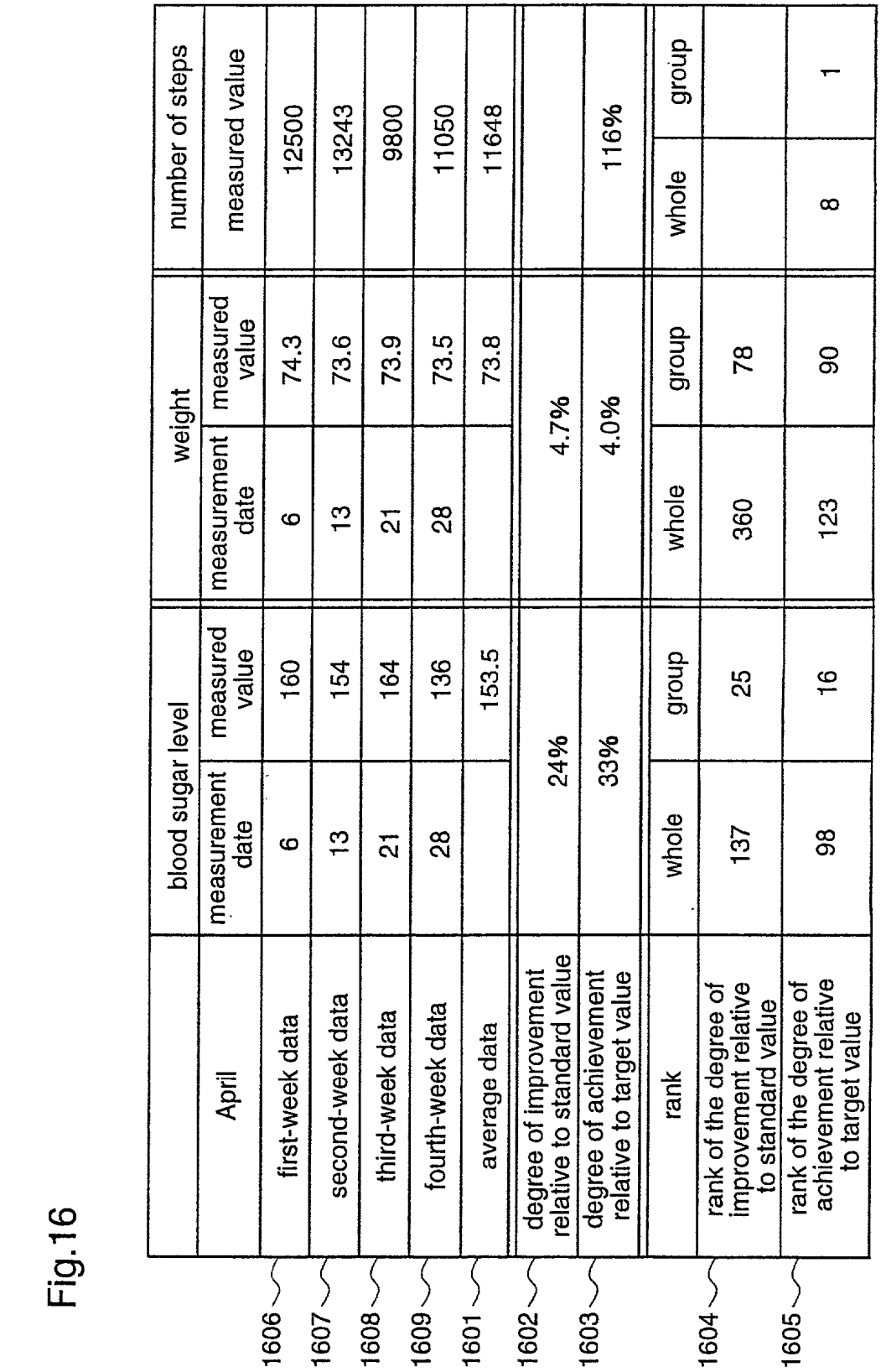

storage means
health data
blood sugar
weight
number of steps
1501
1502
1503
1504
1505
profile registration means
subscriber data
initial blood sugar level
target blood sugar level
initial weight
target weight
standard weight
target number of steps
1506
1507
1508
1509
1510
1511
1512
1513
ordinal rank decision means
standard blood sugar level
improvement/ achievement degree calculation
improvement/ achievement degree data
ordinal rank data
ordinal rank calculation
1514
1515
1516
1517
1519
1523
group decision means
group data
1518
1522
management reporting means
communication means
1520
1521

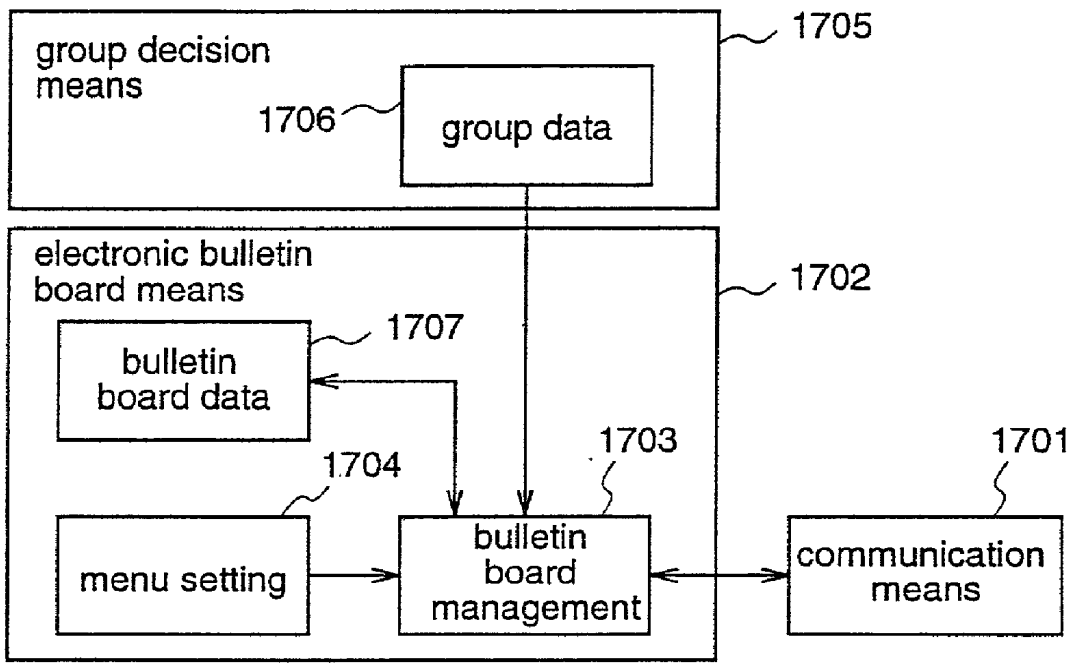
Fig.15

Fig.16



		blood sugar level		weight		number of steps	
	April	measurement date	measured value	measurement date	measured value	measured value	
1606	first-week data	6	160	6	74.3	12500	
1607	second-week data	13	154	13	73.6	13243	
1608	third-week data	21	164	21	73.9	9800	
1609	fourth-week data	28	136	28	73.5	11050	
1601	average data		153.5		73.8	11648	
1602	degree of improvement relative to standard value	24%		4.7%			
1603	degree of achievement relative to target value	33%		4.0%		116%	
	rank	whole	group	whole	group	whole	group
1604	rank of the degree of improvement relative to standard value	137	25	360	78		
1605	rank of the degree of achievement relative to target value	98	16	123	90	8	1

Fig.17


group decision means
1705
1706
group data
electronic bulletin board means
1702
1707
bulletin board data
1703
1701
1704
menu setting
bulletin board management
communication means

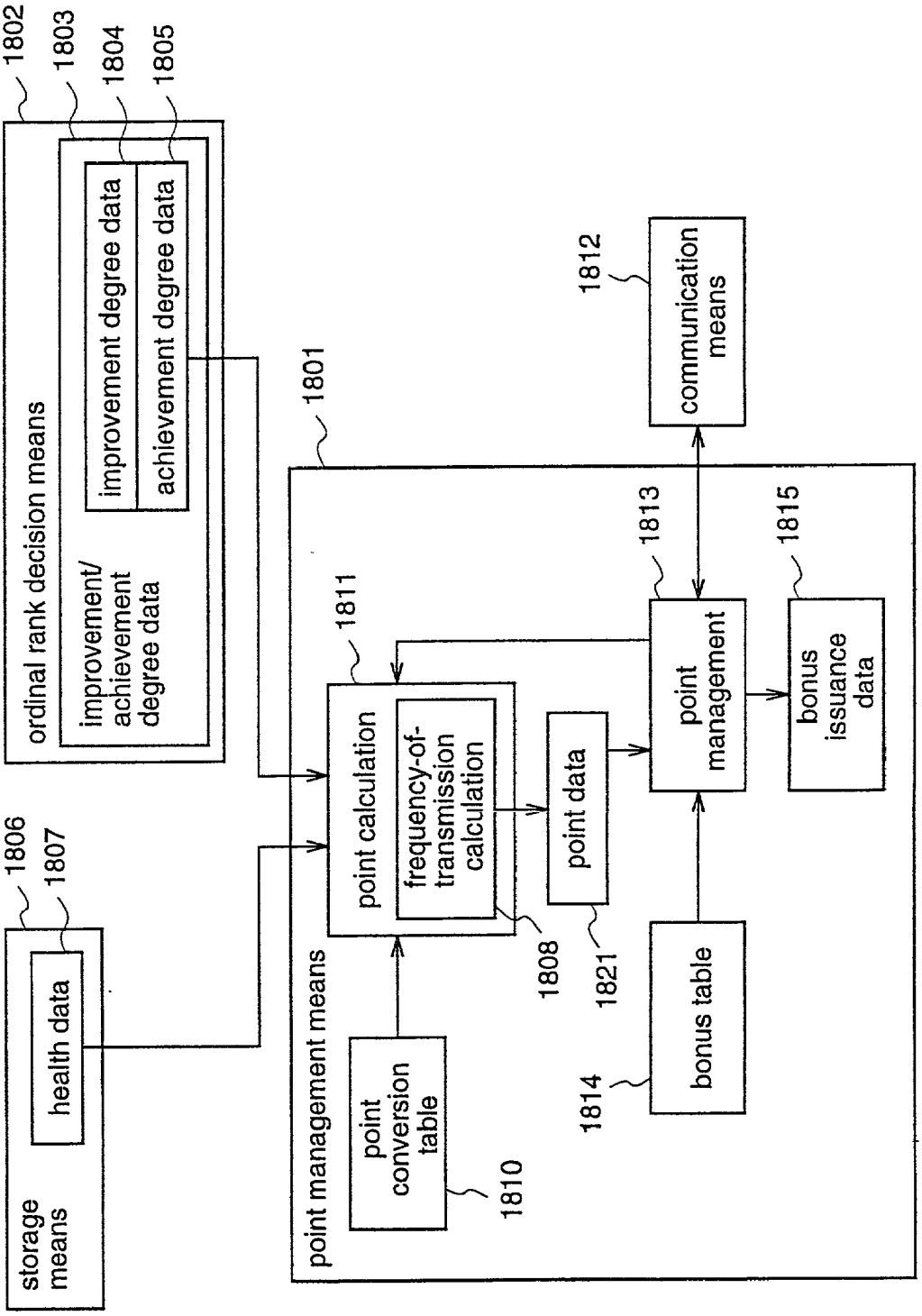

storage means
health data
1806
1807
ordinal rank decision means
improvement/ achievement degree data
improvement degree data
achievement degree data
1802
1803
1804
1805
point management means
point calculation
frequency-of-transmission calculation
point conversion table
point data
bonus table
point management
bonus issuance data
communication means
1801
1808
1810
1811
1812
1813
1814
1815
1821

Fig.18

Fig.19

degree of improvement/ achievement	point	frequency of health data transmission	point
100%≦	5 points		
75%≦, >100%	4 points	4 time or more	4 points
50%≦, >75%	3 points	3 times	3 points
25%≦, >50%	2 points	2 times	2 points
0%<, >25%	1 point	1 time	1 point
0%≧	0 point	0 time	0 point

Fig.20

		degree of improvement/ achievement	point
blood sugar	relative to standard value	24%	1 point
	relative to target value	33%	2 points
weight	relative to standard value	4.7%	1 point
	relative to target value	4.0%	1 point
number of steps	relative to target value	116%	5 points
frequency of health data transmission		4 times	4 points
this-month total points			14 points
last-month accumulated points			275 points
this-month used points			0 point
this-month accumulated points			289 points

Fig.21

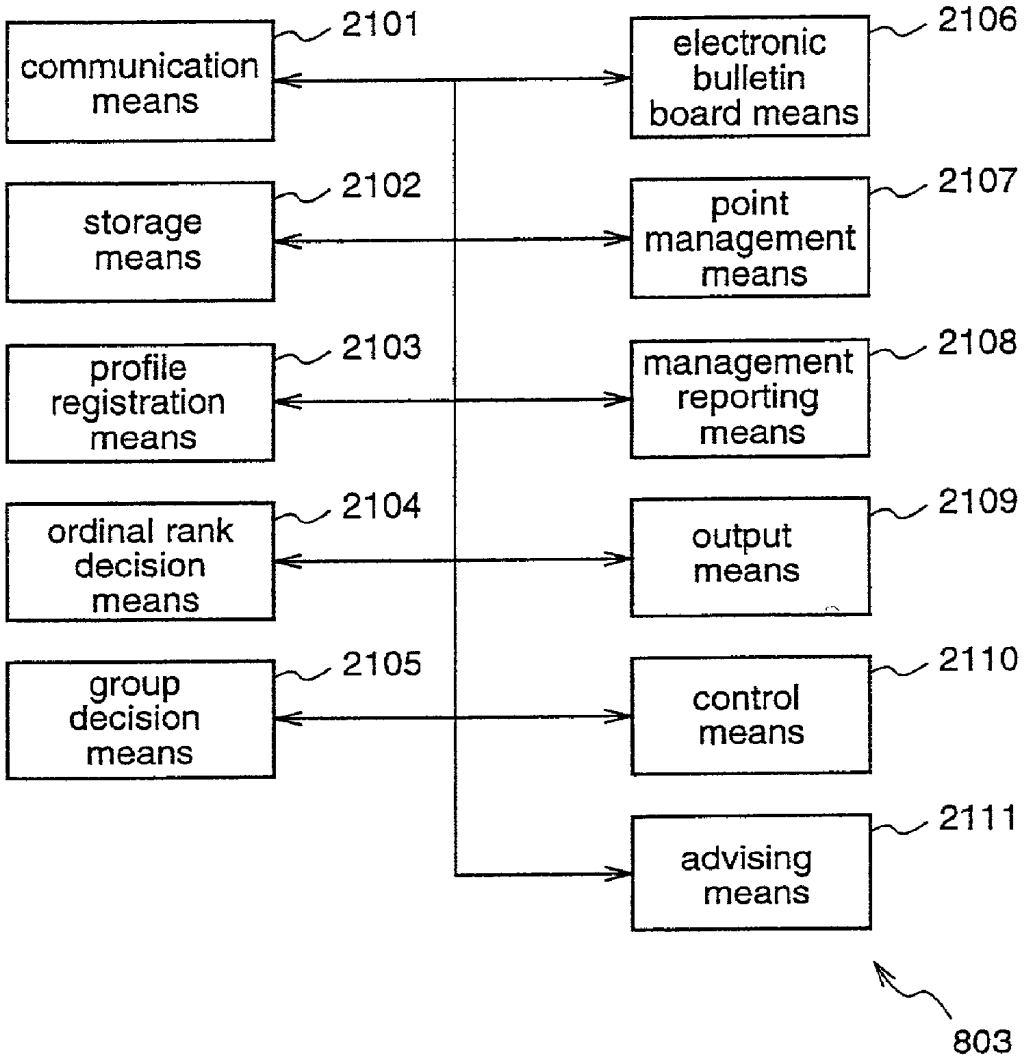
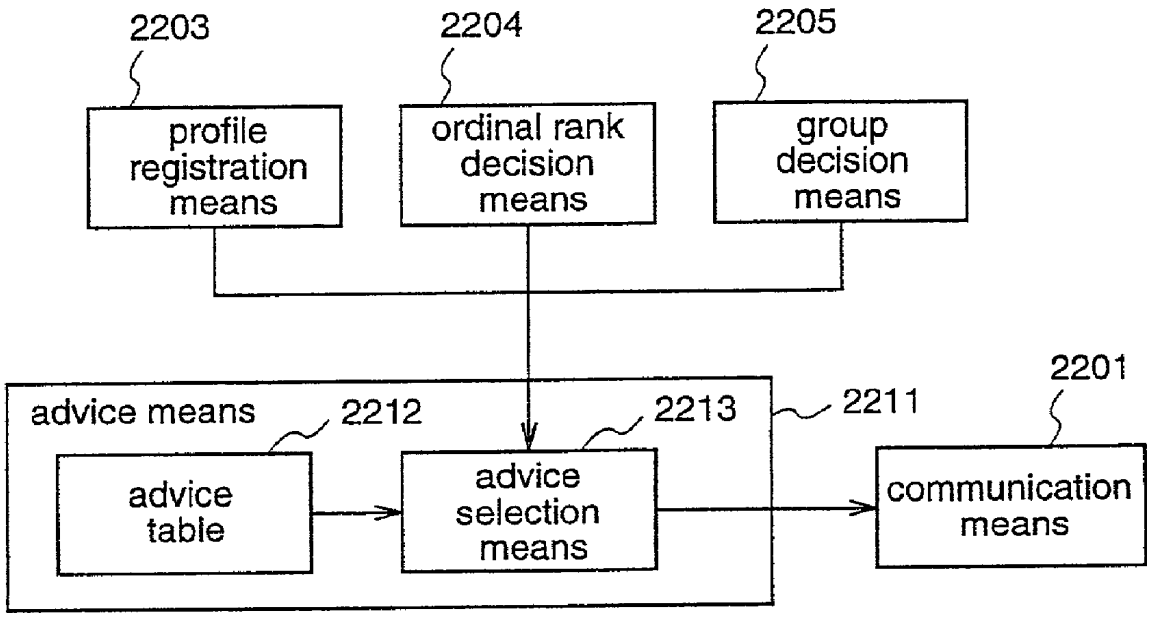

communication means
2101
storage means
2102
profile registration means
2103
ordinal rank decision means
2104
group decision means
2105
electronic bulletin board means
2106
point management means
2107
management reporting means
2108
output means
2109
control means
2110
advising means
2111
803

Fig.22


2203
2204
2205
profile registration means
ordinal rank decision means
group decision means
advice means
2212
2213
2211
2201
advice table
advice selection means
communication means

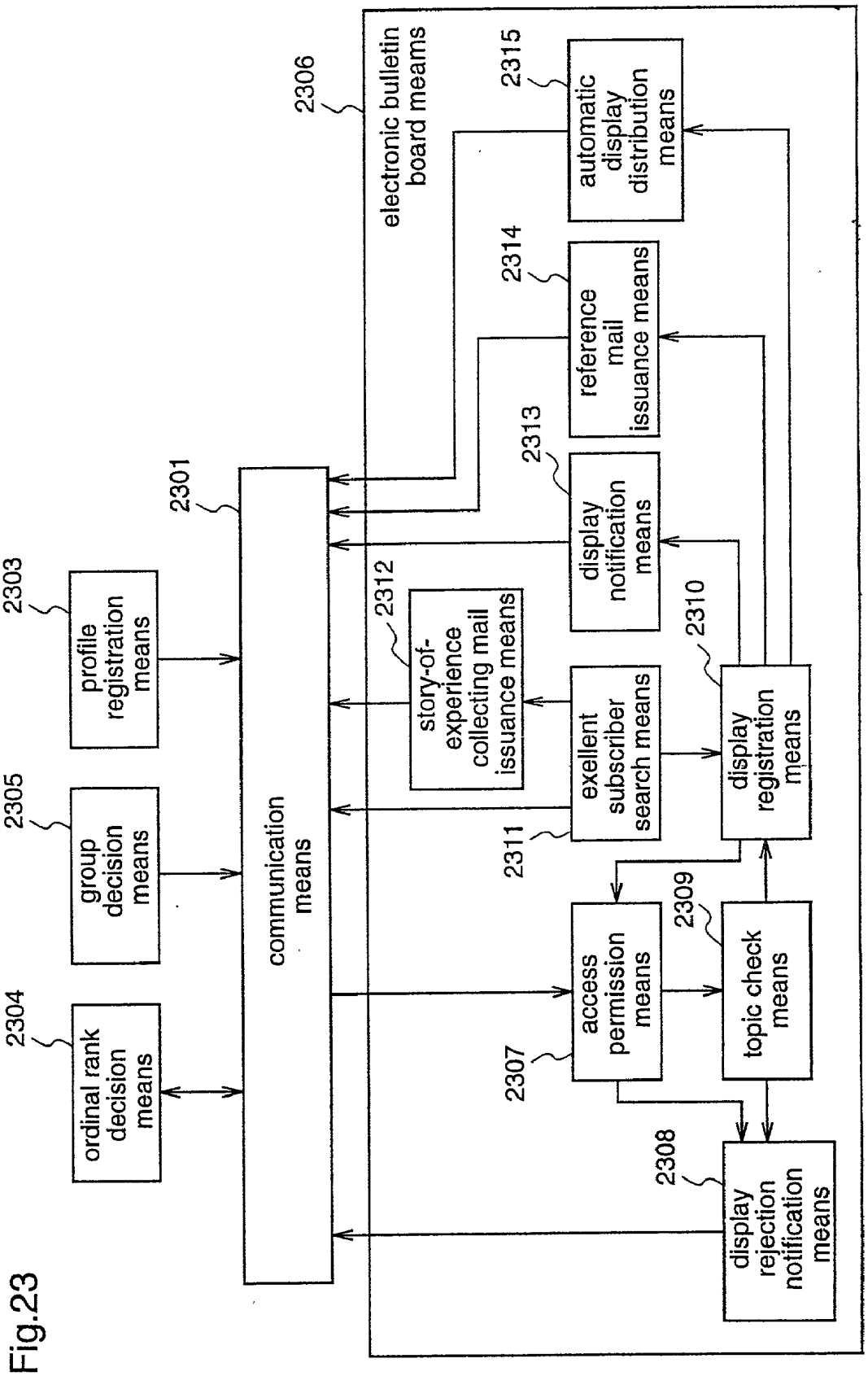
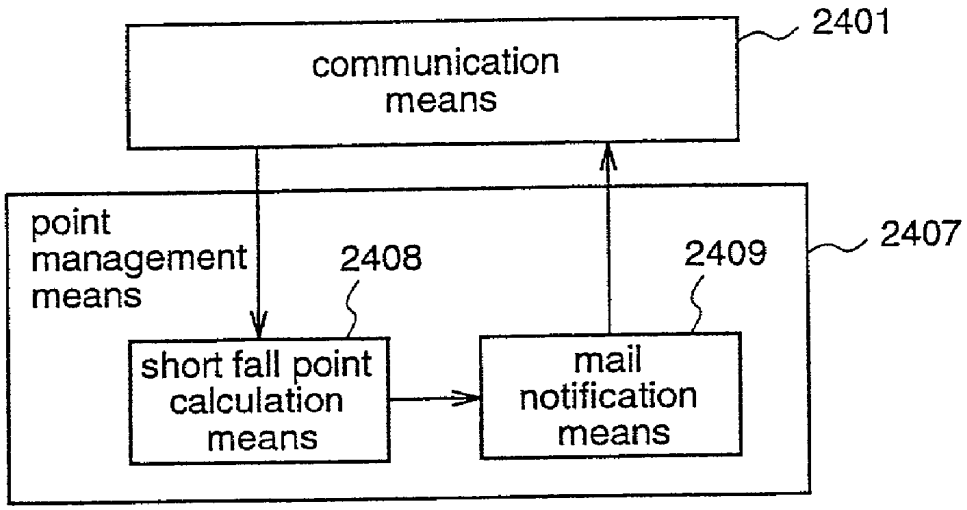

2306
electronic bulletin board means
2315
automatic display distribution means
2314
reference mail issuance means
2313
display notification means
2301
2303
profile registration means
2312
story-of-experience collecting mail issuance means
2310
display registration means
2305
group decision means
communication means
2311
exellent subscriber search means
2309
topic check means
2304
ordinal rank decision means
2307
access permission means
2308
display rejection notification means

Fig.23

Fig.24


communication means
2401
point management means
2408
2409
2407
short fall point calculation means
mail notification means

HEALTH CARE SYSTEM

FIELD OF THE INVENTION

[0001] The present invention relates to a health care system for preventing life style-related diseases, which comprises terminal devices installed at homes or the like, an external data management center, and a communication circuit for connecting each terminal device with the external data management center. More particularly, the invention relates to a health care system which is improved so as to perform promotion and support for transmission of heath data from a subscriber as well as management of the health data at the external data management center.

BACKGROUND OF THE INVENTION

[0002] In order to prevent life style-related diseases, self-awareness of each person and improvement of his/her life style are necessary. Once a person takes a life style-related disease, he/she has to go to hospital regularly over a long period of time. Therefore, an at-home health care system for preventing the onset of a disease and monitoring the condition of a patient has conventionally been proposed.

[0003] For example, Japanese Published Patent Application No. Hei. 2-279056 discloses a data collection system for transmitting a blood sugar level of a diabetic patient who has drawn blood by him/herself, to a hospital through a telephone line, and managing the data at the hospital. Meanwhile, Japanese Published Patent Application No. Hei. 3-268739 discloses a data transmission system for transmitting a body surface potential signal of a patient who is outside a hospital, to an electrocardiogram analyzing system installed at the hospital through a telephone line, thereby examining the function of the circulatory system of the patient.

[0004] Furthermore, Japanese Published Patent Application No. Hei. 10-500598 proposes a system for monitoring and reporting physiological characteristic data which is measured by a patient, and an embodiment of this prior art discloses a system for establishing a bi-directional communication link between an asthmatic patient and a doctor, without intervention of another person, during a process of executing a care plan which is formed by the doctor for the asthmatic patient, that is, a system for achieving, by an economical method, collection, processing, and transmission of respiration data obtained by an individual.

[0005] As described above, the conventional at-home health care system is constituted by subscriber terminal devices and an external data management center. The external data management center manages health data of each subscriber, and feeds the progression of the managed health data back to the subscriber, thereby to encourage self-awareness of the subscriber, which leads to improvement of the life style of the subscriber.

[0006] In the conventional health care system, it is necessary to increase the system operating efficiency by providing many subscribers with advices on improvement of their life styles collectively. However, since the life styles vary among the subscribers, this method cannot provide each subscriber with an advice suited to his/her life style.

[0007] Furthermore, although the conventional health care system aims to improve the life style of each subscriber by providing the subscriber with an appropriate advice for improvement of the life style, continuation of the will to improve the life style depends on the subscriber. The frequency of transmission of health data to the external data management center is often reduced due to negligence of each subscriber and, worse yet, the transmission might be abandoned, resulting in insufficient function of the health care system.

SUMMARY OF THE INVENTION

[0008] The present invention is made to solve the above-mentioned problems and has for its object to provide a health care system by which an external data management center can provide many subscribers with appropriate advices at low cost, and the subscribers are encouraged to continuously measure their health data and transmit the health data to the external data management center.

[0009] Other objects and advantages of the invention will become apparent from the detailed description that follows. The detailed description and specific embodiments described are provided only for illustration since various additions and modifications within the scope of the invention will be apparent to those of skill in the art from the detailed description.

[0010] According to a 1st aspect of the present invention, there is provided a health care system for exchanging data of predetermined subscribers between plural subscriber terminal devices and a data management center through a communication line, wherein each of the subscriber terminal devices comprises: an input means for inputting health data of the corresponding subscriber; a storage means for holding the health data inputted by the input means; a first communication means for performing data communication with the data management center; a display means for displaying the health data inputted by the input means, and information transmitted from the data management center; and an operation means with which the subscriber performs a series of operations; and the data management center comprises: a second communication means for performing data communication with each of the respective subscriber terminal devices; a storage means for holding health data transmitted from each of the subscriber terminal devices; a group decision means for deciding a group to which each subscriber belongs, on the basis of plural pieces of health data obtained from the storage means; and an advising means for providing each subscriber terminal device with plural advice candidates which are common to subscribers in the group to which the subscriber terminal device belongs, through the second communication means. Therefore, the subscribers can be classified into plural groups, each group including subscribers having risks of approximately equal levels, by performing grouping on the basis of plural kinds of health data which are physiologically different from each other, such as blood sugar levels and weights of the subscribers, and the subscribers are provided with plural advices which widely cover the life styles that vary among individuals and are common to the subscribers in the same group, whereby appropriate advices can be efficiently given to many subscribers. According to a 2nd aspect of the present invention, in the health care system according to the 1st aspect, the subscriber terminal device further includes an advice selection means for selecting at least one advice candidate which is desired by the corresponding subscriber, from the plural

advice candidates supplied from the advising means. Therefore, each subscriber can select advices suited to his/her life style.

[0011] According to a 3rd aspect of the present invention, in the health care system according to the 2nd aspect, the data management center further includes an advice registration means for holding the advice candidate selected by the advice selection means; and the data management center provides the subscriber terminal device with the advice candidate stored in the advice registration means, as an advice, by the advising means. Therefore, each subscriber can confirm the advices selected by him/herself to make efforts for improving his/her life style.

[0012] According to a 4th aspect of the present invention, in the health care system according to the 1 st aspect, the group decision means remakes the group to which the subscriber belongs, according to a change in the health data transmitted from the subscriber terminal device; and the advising means provides the subscriber terminal device with plural advice candidates which are common to the subscribers who belong to the remade group. Therefore, each subscriber can be provided with appropriate advices according to a change in his/her health data.

[0013] According to a 5th aspect of the present invention, in the health care system according to the 1 st aspect, the health data includes data relating to blood sugar level, and weight or body mass index (BMI). Therefore, health data corresponding to the life style-related diseases of the respective subscribers can be adopted.

[0014] According to a 6th aspect of the present invention, in the health care system according to the 1 st aspect, the health data includes data relating to blood pressure, and weight or body mass index (BMI). Therefore, health data corresponding to the life style-related diseases of the respective subscribers can be adopted.

[0015] According to a 7th aspect of the present invention, in the health care system according to the 1st aspect, the health data includes data relating to cholesterol, and weight or body mass index (BMI). Therefore, health data corresponding to the life style-related diseases of the respective subscribers can be adopted.

[0016] According to an 8th aspect of the present invention, in the health care system according to the 1st aspect, the health data includes data relating to neutral fat, and weight or body mass index (BMI). Therefore, health data corresponding to the life style-related diseases of the respective subscribers can be adopted.

[0017] According to a 9th aspect of the present invention, in the health care system according to the 1st aspect, the health data includes data relating to glutamic acid oxaloacetic acid transaminase (GOT), and weight or body mass index (BMI). Therefore, health data corresponding to the life style-related diseases of the respective subscribers can be adopted.

[0018] According to a 110th aspect of the present invention, in the health care system according to the 1st aspect, the health data includes data relating to glutamic acid pyrivic acid transaminase (GPT), and weight or body mass index (BMI). Therefore, health data corresponding to the life style-related diseases of the respective subscribers can be adopted.

[0019] According to an 11th aspect of the present invention, in the health care system according to the 1st aspect, the health data includes data relating to γ-glutamyl transpeptidase, and weight or body mass index (BMI). Therefore, health data corresponding to the life style-related diseases of the respective subscribers can be adopted.

[0020] According to a 12th aspect of the present invention, there is provided a health care system for exchanging data of predetermined subscribers between plural subscriber terminal devices and a data management center through a communication line, wherein each of the subscriber terminal devices comprises: an input means for inputting health data; a storage means for holding the health data inputted by the input means; a first communication means for performing data communication with the data management center; a display means for displaying the health data and information from the data management center; and an operation means with which the subscriber performs a series of operations; and the data management center comprises: a second communication means for performing data communication with the subscriber terminal devices; and an ordinal rank decision means for deciding the ordinal ranks of the health data among the plural subscribers, on the basis of the health data which are obtained from the storage means for holding the health data transmitted from the subscriber terminal devices. Therefore, each subscriber can improve his/her life style while comparing a change in his/her health data with those of other subscribers, thereby encouraging the subscriber to keep the will to improve the life style.

[0021] According to a 13th aspect of the present invention, in the health care system according to the 12th aspect, the ordinal rank decision means includes a health data improvement degree calculation means for calculating the degree of improvement in the health data of each subscriber by comparing the health data with a standard value or an index value; and the ordinal rank according to the degree of improvement is employed as the ordinal rank of the health data. Therefore, each subscriber can improve his/her life style while comparing a change in his/her health data with those of other subscribers, according to the degree of improvement relative to a standard value or an index value, thereby encouraging the subscriber to keep the will to improve the life style.

[0022] According to a 14th aspect of the present invention, in the health care system according to the 12th aspect, the subscriber terminal device further includes an improvement target setting means for setting an improvement target value of the health data. Therefore, each subscriber can improve his/her life style by setting a target value in improvement of health data, thereby encouraging the subscriber to keep the will to improve the life style.

[0023] According to a 15th aspect of the present invention, in the health care system according to the 12th aspect, the data management center further includes an improvement target value registration means for holding the improvement target value which is set by the improvement target setting means of the 14th aspect, through the second communication means; the ordinal rank decision means includes a target value achievement degree calculation means for calculating the degree of achievement to the improvement target value of the subscriber, which is stored in the improvement target value registration means; and the ordinal rank according to

the degree of achievement is employed as the ordinal rank of the health data. Therefore, each subscriber can improve his/her life style while comparing a change in his/her health data with those of other subscribers, according to the degree of achievement to an improvement target value that is set by the subscriber, thereby encouraging the subscriber to keep the will to improve the life style.

[0024] According to a 16th aspect of the present invention, there is provided a health care system for exchanging data of predetermined subscribers between plural subscriber terminal devices and a data management center through a communication line, wherein each of the subscriber terminal devices comprises: an input means for inputting health data and information; a storage means for holding the health data and information which are inputted by the input means; a first communication means for performing data communication with the data management center; a display means for displaying the health data and information from the data management center; and an operation means with which the subscriber performs a series of operations; and the data management center comprises: a second communication means for performing data communication with the subscriber terminal devices; a storage means for holding the health data transmitted from the subscriber terminal devices; and an electronic bulletin board means in/from which topics or the like relating to health can be written or read by the subscriber terminal devices through the second communication line. Therefore, each subscriber can improve his/her life style while exchanging information with other subscribers via the electronic bulletin board, thereby encouraging the subscriber to keep the will to improve the life style.

[0025] According to a 17th aspect of the present invention, there is provided a health care system for exchanging data of predetermined subscribers between plural subscriber terminal devices and a data management center through a communication line, wherein each of the subscriber terminal devices comprises: an input means for inputting health data and information; a storage means for holding the health data and information which are inputted by the input means; a first communication means for performing data communication with the data management center; a display means for displaying the health data and information from the data management center; and an operation means with which the subscriber performs a series of operations; and the data management center comprises: a second communication means for performing data communication with the subscriber terminal devices; a storage means for holding the health data transmitted from the subscriber terminal devices; a profile registration means for holding profile data of each subscriber, such as sex, hobby and the like; and a group decision means for deciding a group to which each subscriber belongs, on the basis of the stored profile data of the subscriber. Therefore, the health data of each subscriber is managed within the group of subscribers whose profiles are similar to the profile of the subscriber, which makes the subscriber feel comfortable, thereby encouraging the subscriber to keep the will to improve the life style.

[0026] According to an 18th aspect of the present invention, in the health care system according to the 17th aspect, the data management center further includes an ordinal rank decision means for deciding the ordinal ranks of the health data among the subscribers in the group to which the subscribers belong, which group is created by the group decision means on the basis of the health data obtained from the storage means. Therefore, each subscriber can improve his/her life style while comparing a change in his/her health data with those of other subscribers in the group of subscribers whose profiles are similar to the profile of the subscriber, thereby encouraging the subscriber to keep the will to improve the life style.

[0027] According to a 19th aspect of the present invention, in the health care system according to the 18th aspect, the ordinal rank decision means includes a health data improvement degree calculation means for calculating the degree of improvement in the health data of each subscriber by comparing the health data with a standard value or an index value; and the ordinal rank based on the degree of improvement is employed as the ordinal rank of the health data. Therefore, each subscriber can improve his/her life style while comparing a change in his/her health data relative to a standard value or index value, with those of other subscribers, in the group of subscribers whose profiles are similar to the profile of the subscriber, thereby encouraging the subscriber to keep the will to improve the life style.

[0028] According to a 20th aspect of the present invention, in the health care system according to the 17th aspect, the subscriber terminal device includes an improvement target setting means for setting an improvement target value of the health data. Therefore, each subscriber can improve his/her life style by setting a target value in improvement of health data, in the group of subscribers whose profiles are similar to the profile of the subscriber, thereby encouraging the subscriber to keep the will to improve the life style.

[0029] According to a 21st aspect of the present invention, in the health care system according to the 17th aspect, the data management center includes an improvement target value registration means for holding the improvement target value which is set by the improvement target setting means of the 20th aspect, through the second communication means; the health data ordinal rank decision means of the 18th aspect includes a target value achievement degree calculation means for calculating the degree of achievement to the improvement target value of each subscriber, which target value is stored in the improvement target value registration means that decides the ordinal ranks of the health data among the subscribers in the group to which the subscribers belong; and the ordinal rank according to the degree of achievement is employed as the ordinal rank of the health data of each subscriber. Therefore, each subscriber can improve his/her life style while comparing a change in his/her health data with those of other subscribers, according to the degree of achievement to an improvement target value that is set by the subscriber, in the group of subscribers whose profiles are similar to the profile of the subscriber, thereby encouraging the subscriber to keep the will to improve the life style.

[0030] According to a 22nd aspect of the present invention, in the health care system according to the 17th aspect, the data management center includes an electronic bulletin board means in/from which topics or the like relating to health can be written or read by the subscriber terminal devices through the second communication means, only in the group to which the subscribers belong, which group is created by the group decision means. Therefore, each subscriber can improve his/her life style while exchanging

information with other subscribers in the group of subscribers whose profiles are similar to the profile of the subscriber, thereby encouraging the subscriber to keep the will to improve the life style.

[0031] According to a 23rd aspect of the present invention, the health care system according to the 12th or 17th aspect further includes a point management means for converting at least one of the degree of improvement described for the 13th aspect, the degree of achievement described for the 15th aspect, and the number of transmission of the health data which are obtained from the storage means for holding the health data transmitted from the subscriber terminal device, into service points (hereinafter, referred to simply as points); accumulating and managing the points, and sending the accumulated points and bonus information such as gifts to the subscriber terminal device through the second communication means, when there is a request to use the points from the subscriber terminal device through the second communication means; and when there is a request for a bonus such as a gift from the subscriber terminal device, exchanging the points corresponding to the bonus, for the bonus. Therefore, each subscriber can improve his/her life style by transmitting his/her health data to the external data management center, getting points when the health data is improved, and exchanging the points for a bonus such as a gift, thereby encouraging the subscriber to keep the will to improve the life style.

[0032] According to a 24th aspect of the present invention, in the health care system according to any of the 12th, 16th, 17th, and 23rd aspects, the health data includes data relating to blood sugar level, weight, and number of steps. Therefore, health data corresponding to the life style-related diseases of the respective subscribers can be adopted.

[0033] According to a 25th aspect of the present invention, in the health care system according to any of the 12th, 16th, 17th, and 23rd aspects, the health data includes data relating to blood pressure, weight, and number of steps. Therefore, health data corresponding to the life style-related diseases of the respective subscribers can be adopted.

[0034] According to a 26th aspect of the present invention, in the health care system according to any of the 12th, 16th, 17th, and 23rd aspects, the health data includes data relating to cholesterol, weight, and number of steps. Therefore, health data corresponding to the life style-related diseases of the respective subscribers can be adopted.

[0035] According to a 27th aspect of the present invention, in the health care system according to the 1st aspect, the subscriber terminal device further includes a first control means for controlling the respective means constituting the subscriber terminal device; the data management enter further includes a second control means for controlling the respective means constituting the data management center; the first control means controls the first communication means so as to transmit the health data of the subscriber, which is inputted from the input means; the second control means controls the second communication means so as to receive the health data; the second control means controls the group decision means so as to decide a group to which the subscriber belongs, on the basis of the health data; and the second control means controls the advising means so as to create advice candidates suited to the group. Therefore, the subscribers can be classified into plural groups, each group including subscribers having risks of approximately equal levels, by performing grouping on the basis of plural kinds of health data which are physiologically different from each other, such as blood sugar levels and weights of the subscribers, and the system is controlled such that the subscribers are provided with plural advices which widely cover the life styles that vary among individuals and are common to the subscribers in the same group, whereby appropriate advices can be efficiently given to many subscribers.

[0036] According to a 28th aspect of the present invention, in the health care system according to the 27th aspect, the first control means controls the first communication means so as to receive the advice candidates; the first control means controls the display means of the 1st aspect so as to display the advice candidates; and the first control means controls the first communication means so as to transmit an advice candidate selected by the input means of the 1st aspect. Therefore, the health care system can be controlled such that each subscriber can select advices suited to his/her life style.

[0037] According to a 29th aspect of the present invention, in the health care system according to the 27th aspect, the second control means controls the second communication means so as to receive the selected advice candidate described for the 28th aspect; the second control means controls the storage means of the 1st aspect so as to hold at least one advice candidate received; and the second control means controls the second communication means so as to transmit the stored advice. Therefore, the health care system can be controlled such that each subscriber can confirm the advices selected by him/herself, thereby encouraging the subscriber to make efforts for improving the life style.

[0038] According to a 30th aspect of the present invention, in the health care system according to the 27th aspect, the second control means controls the group decision means so as to remake the group according to a change in the health data transmitted through the first communication means; and the second control means controls the second communication means so as to transmit plural advice candidates which are common to the remade group. Therefore, the health care system can be controlled so as to provide each subscriber with appropriate advices according to a change in the health data of the subscriber.

[0039] According to a 31st aspect of the present invention, in the health care system according to the 12th aspect, the subscriber terminal device further includes a first control means for controlling the respective means constituting the subscriber terminal device; the data management center further includes a second control means for controlling the respective means constituting the data management center; the first control means controls the first communication means so as to transmit the health data; the second control means controls the second communication means so as to receive the health data; and the second control means controls the ordinal rank decision means so as to decide the ordinal ranks among the subscribers on the basis of the health data. Therefore, the health care system can be controlled so as to decide the ordinal ranks which are data for making each subscriber try to improve the life style while comparing a change in his/her health data with those of other subscribers, thereby encouraging the subscriber to keep the will to improve the life style.

[0040] According to a 32nd aspect of the present invention, in the health care system according to the 31st aspect, the second control means controls the ordinal rank decision means so as to calculate the degree of improvement in the health data of each subscriber by comparing the health data with a standard value or an index value, as the ordinal rank of the heath data. Therefore, the health care system can be controlled so as to calculate the degree of improvement relative to a standard value or index value, and the subscriber can improve the life style while comparing a change in his/her health data with those of other subscribers, thereby encouraging the subscriber to keep the will to improve the life style.

[0041] According to a 33rd aspect of the present invention, in the health care system according to the 31st aspect, the first control means controls the first communication means so as to transmit the improvement target value of the health data which is inputted by the input means of the 12th aspect, thereby setting the improvement target value. Therefore, the health care system can be controlled such that each subscriber can improve the life style by setting a target value in improvement of his/her health data, thereby encouraging the subscriber to keep the will to improve the life style.

[0042] According to a 34th aspect of the present invention, in the health care system according to the 31st aspect, the second control means controls the second communication means so as to receive the improvement target value described for the 33rd aspect, and controls the storage means of the 12th aspect so as to hold the improvement target value; the second control means controls the ordinal rank decision means so as to calculate the degree of achievement on the basis of the health data received from the second communication means and the stored improvement target value; and the second control means controls the ordinal rank decision means so as to decide the ordinal rank of the health data according to the rank based on the degree of achievement. Therefore, the health care system can be controlled so as to calculate the degree of achievement to an improvement target value that is set by each subscriber, and the subscriber can improve the life style while comparing a change in his/her health data with those of other subscribers, thereby encouraging the subscriber to keep the will to improve the life style.

[0043] According to a 35th aspect of the present invention, in the health care system according to the 16th aspect, the subscriber terminal device further includes a first control means for controlling the respective means constituting the subscriber terminal device; the data management center further includes a second control means for controlling the respective means constituting the data management center; the first control means controls the first communication means so as to transmit topics relating to health or the like; the second control means controls the second communication means so as to receive the topics relating to health or the like; and the second control means control the electronic bulletin board means so as to display the received topics. Therefore, the health care system can be controlled so as to display information on the electronic bulletin board which is a place for interaction among the subscribers, and each subscriber can improve the life style while exchanging information with other subscribers via the electronic bulletin board, thereby encouraging the subscriber to keep the will to improve the life style.

[0044] According to a 36th aspect of the present invention, in the health care system according to the 17th aspect, the subscriber terminal device further includes a first control means for controlling the respective means constituting the subscriber terminal device; the data management center further includes a second control means for controlling the respective means constituting the data management center; the first control means controls the first communication means so as to transmit profile data of the subscriber; the second control means controls the second communication means so as to receive the profile data, and controls the storage means so as to hold the profile data; and the second control means controls the group decision means so as to decide the group to which the subscriber belongs, on the basis of the profile data stored in the storage means. Therefore, the health care system can be controlled so as to manage the health data of each subscriber in the group of subscribers whose profiles are similar to that of the subscriber, which makes the subscriber feel comfortable, thereby encouraging the subscriber to keep the will to improve the life style.

[0045] According to a 37th aspect of the present invention, in the health care system according to the 36th aspect, the second control means controls the ordinal rank decision means of the 31st aspect so as to decide the ordinal rank of the health data within the group to which the subscriber belongs, which group is decided by the group decision means. Therefore, the health care system can be controlled such that each subscriber can compare a change in his/her health data with those of other subscribers in the group of subscribers whose profiles are similar to that of the subscriber, whereby the subscriber can improve the life style while comparing a change in his/her health data with those of other subscribers, thereby encouraging the subscriber to keep the will to improve the life style.

[0046] According to a 38th aspect of the present invention, in the health care system according to the 37th aspect, the second control means controls the second communication means of the 36th aspect so as to receive the health data of the subscriber; and the second control means controls the ordinal rank decision means of the 17th aspect so as to calculate the degree of achievement by comparing the received health data with a standard value or an index value. Therefore, the health care system can be controlled such that each subscriber can compare a change in his/her health data relative to a standard value or index value, with those of other subscribers, in the group of subscribers whose profiles are similar to that of the subscriber, whereby the subscriber can improve his/her life style while comparing a change in his/her health data with those of other subscribers, thereby encouraging the subscriber to keep the will to improve the life style.

[0047] According to a 39th aspect of the present invention, in the health care system according to the 36th aspect, the first control means controls the first communication means so as to transmit the improvement target value of the health data which is inputted by the input means of the 17th aspect. Therefore, the health care system can be controlled such that each subscriber can set a target value in improvement of his/her health data in the group of subscribers whose profiles are similar to that of the subscriber, whereby the subscriber can improve the life style by setting a target value in

improvement of the health data, thereby encouraging the subscriber to keep the will to improve the life style.

[0048] According to a 40th aspect of the present invention, in the health care system according to the 36th aspect, the second control means controls the second communication means so as to receive the improvement target value described in the 33rd aspect; the second control means controls the storage means so as to hold the received improvement target value; and the second control means control the ordinal rank decision means of the 31st aspect so as to calculate the degree of achievement to the improvement target value of the subscriber. Therefore, the health care system can be controlled such that each subscriber can compare a change in his/her health data with those of other subscribers, according the degree of achievement to an improvement target value that is set by the subscriber, in the group of subscribers whose profiles are similar to that of the subscriber, whereby the subscriber can improve the life style while comparing a change in his/her health data with those of other subscribers, thereby encouraging the subscriber to keep the will to improve the life style.

[0049] According to a 41st aspect of the present invention, in the health care system according to the 36th aspect, the second control means controls the electronic bulletin board means of the 22nd aspect so as to permit only the subscribers decided by the group decision means to read or write data from/in the bulletin board means. Therefore, the health care system can be controlled such that each subscriber can exchange information with other subscribers via the electronic bulletin board in the group of subscribers whose profiles are similar to that of the subscriber, thereby encouraging the subscriber to keep the will to improve the life style.

[0050] According to a 42nd aspect of the present invention, in the health care system according to the 31st or 36th aspect, the second control means controls the point management means of the 23rd aspect so as to convert at least one of the degree of improvement calculated by the health data improvement degree calculation means of the 13th aspect, the degree of target achievement calculated by the target achievement degree calculation means of the 15th aspect, and the number of transmission of the health data obtained from the storage means, into service points (hereinafter referred to simply as points); the first control means controls the first communication means so as to transmit a request to use the points, which request is inputted from the input means of the 17th aspect; the second control means controls the second communication means so as to transmit information about bonuses which can be obtained using the points; the first control means controls the first communication means so as to receive the bonus information; the first control means controls the first communication means so as to transmit the bonus information selected by the input means; and the second control means controls the point management means so as to exchange the points for the bonus corresponding to the selected bonus information. Therefore, the health care system can be controlled so that each subscriber can transmit his/her health data to the external data management center, earn points by improving the health data, and exchange the points for a bonus such as a gift, whereby the subscriber can improve the life style while exchanging the points with a bonus such as a gift, thereby encouraging the subscriber to keep the will to improve the life style.

BRIEF DESCRIPTION OF THE DRAWINGS

[0051] For a further understanding of these and other objects of the invention, reference will be made to the following detailed description of the invention which is to be read in connection with the accompanying drawing, wherein:

[0052] **FIG. 1** is a conceptual diagram illustrating a health care system according to a first embodiment of the present invention.

[0053] **FIG. 2** is a block diagram illustrating the structure of a subscriber terminal device according to the first embodiment.

[0054] **FIG. 3** is a functional block diagram illustrating an external data management center according to the first embodiment.

[0055] **FIG. 4** is a flow chart for explaining the operation of the subscriber terminal device according to the first embodiment.

[0056] **FIG. 5** is a block diagram for explaining group decision and advice provision according to the first embodiment.

[0057] **FIG. 6** is a diagram illustrating an example of a group table according to the first embodiment.

[0058] **FIG. 7** is a diagram illustrating an example of an advice table according to the first embodiment.

[0059] **FIG. 8** is a conceptual diagram illustrating a health care system according to a second embodiment of the present invention.

[0060] **FIG. 9** is a block diagram illustrating the structure of a subscriber terminal device according to the second embodiment.

[0061] **FIG. 10** is a functional block diagram illustrating an external data management center according to the second embodiment.

[0062] **FIG. 11** is a flowchart for explaining the operation of the subscriber terminal device according to the second embodiment.

[0063] **FIG. 12** is a diagram illustrating health data to be transmitted, according to the second embodiment.

[0064] **FIG. 13** is a diagram illustrating an example of subscriber data according to the second embodiment.

[0065] **FIG. 14** is a block diagram for explaining group decision according to the second embodiment.

[0066] **FIG. 15** is a block diagram for explaining improvement degree/achievement degree calculation and ordinal rank decision according to the second embodiment.

[0067] **FIG. 16** is a diagram illustrating an example of a report to be transmitted to the subscriber terminal device, according to the second embodiment.

[0068] **FIG. 17** is a block diagram illustrating an electronic bulletin board according to the second embodiment.

[0069] **FIG. 18** is a block diagram for explaining point management according to the second embodiment.

[0070] **FIG. 19** is a diagram illustrating an example of a point conversion table according to the second embodiment.

[0071] **FIG. 20** is a diagram illustrating an example of point data to be transmitted to the subscriber terminal device, according to the second embodiment.

[0072] **FIG. 21** is a conceptual diagram illustrating a health care system according to a modification of the second embodiment.

[0073] **FIG. 22** is a block diagram illustrating an advising means according to the modification of the second embodiment.

[0074] **FIG. 23** is a block diagram illustrating an electronic Bulletin board according to the modification of the second embodiment.

[0075] **FIG. 24** is a block diagram illustrating a point management means according to the modification of the second embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0076] [Embodiment 1]

[0077] Hereinafter, a first embodiment of the present invention, which is defined in claims 1 11 and 27 30, will be described with reference to FIGS. **17**.

[0078] In this first embodiment, subscribers are grouped on the basis of the similarities of their health data, plural advice candidates are transmitted to each group, and each subscriber selects at least one advise candidate that is suited to his/her life style. In this way, each subscriber is provided with an appropriate advice at reduced cost.

[0079] In this first embodiment, it is premised that fasting blood sugar level and weight are employed as health data. Instead of blood sugar level, data relating to any of blood pressure value, cholesterol value, neutral fat value, glutamic acid oxaloacetic acid transaminase (GOT) value, glutamic acid pyrivic acid transaminase (GPT) value, and γ-glutamyl transpeptidase (γ-GTP) value, may be employed. Further, body mass index (BMI) may be employed instead of weight.

[0080] **FIG. 1** is a conceptual diagram illustrating a health care system according to the first embodiment.

[0081] The health care system is provided with an external data management center **103** as a server, and plural subscriber terminal devices **101** which are connectable to the external data management center **103** through a communication line **102**.

[0082] While in this first embodiment a telephone line is employed as the communication line **102**, it is also possible to employ a cable TV, a network such as the Internet, or a radio communication line. Depending on the subscriber, some of these lines may be employed together.

[0083] The external data management center **103** may be installed in a data management center of a private company or the like which is independent of a medical institution, or it may be installed in a medical institution.

[0084] Each subscriber terminal device **101** may be fixed at a home, or it may be carried by the subscriber. The subscriber terminal device **101** may be integrated with a fixed telephone or a handy phone.

[0085] **FIG. 2** is a block diagram illustrating an example of the subscriber terminal device **101**.

[0086] The subscriber terminal device **101** is provided with, in its minimum scale, a CPU **201**, a ROM **202**, a RAM **203**, an EEPROM **204**, an I/O port **205**, a modem **206**, an operation unit **207**, and a display unit **208**.

[0087] The CPU **201** (first control means) controls the whole of the subscriber terminal device **101**.

[0088] The ROM **202** holds various kinds of programs or the like.

[0089] The RAM **203** (storage means) temporarily holds various kinds of data or the like, which are processed by the CPU **201**.

[0090] The I/O port **205** (input means) performs input/output of data and control signals into/from the modem **206**, the operation unit **207**, the display unit **208**, and the health data input part **209**.

[0091] The operation unit **207** (input means, operation means, advice selection means) comprises a key board, a ten key pad, switches and the like, with which the subscriber performs various kinds of operations, and input of data or information.

[0092] The display unit **208** (display means) comprises an LCD, an LED, or the like, and displays a menu from which the subscriber selects items, health data, information from the external data management center **103**, or the like, under control of the CPU **201**.

[0093] Health data are directly inputted as numeric values from the ten key pad of the operation unit **207**, and the inputted health data are stored in the RAM **203**. However, there are cases where a health data measuring unit is connected to the health data input unit **209**, and transmits data to receive health data, and where a health data measuring unit is contained in the body of the subscriber terminal device **101**, and health data are obtained using the measuring unit. Furthermore, health data, which were submitted by mail or facsimile from the subscriber to the external data management center **103** when the subscriber subscribed to the health management service, may be transferred through the communication line **102** to the subscriber terminal device **101**. In this case, the subscriber terminal device **101** can dispense with the health data input unit **209**.

[0094] The modem **206** establishes a communication line with the external data management center **103** according to the operation of the operation unit **207**, and performs transmission/reception of data to/from the center **103**. The modem **206** may be an arbitrary device which conducts communication between the subscriber terminal device **101** and the external data management center **103** through the communication line **102**. For example, a modem for ordinary telephone line, a cable modem for CATV, a modem for XDSL (ADSL, SDSL, or the like), a TA or dial-up rooter for ISDN may be employed.

[0095] The EEPROM **204** (storage means) holds information such as the inputted health data.

[0096] **FIG. 3** is a block diagram illustrating various kinds of functions of the external data management center **103**. These functions are substantially implemented by a server program possessed by the external data management center **103**.

[0097] A communication means **301** (second communication means) conducts data communication with each subscriber terminal device **101** through the communication line **102**, and conducts exchange of information between the respective functions of the external data management center **103** and the subscriber terminal device **101**.

[0098] A storage means **302** receives the health data of the subscriber from the subscriber terminal device **101** through the communication means **301**, and holds the health data.

[0099] A group decision means **303** automatically creates a group to which the subscriber belongs, on the basis of the health data stored in the storage means **302**, and holds the group.

[0100] Further, the group decision means **303** detects a change in the health data stored in the storage means **302**, and changes the group to which the subscriber belongs or creates a new group according to the change in the health data, and holds the changed or newly-created group.

[0101] An advising means **304** provides the subscriber terminal device **101** with advices about health care or advice candidates corresponding to the group to which the subscriber belongs, which group is held by the group decision means **303**, through the communication means **301**.

[0102] Furthermore, when the group decision means **303** changes the group to which the subscriber belongs or creates a new group and stores the group, the advising means **304** newly provides the subscriber terminal device **101** with plural advices corresponding to the group to which the subscriber belongs, through the communication means **301**.

[0103] An advice registration means **305** receives the advice selected by the subscriber from the subscriber terminal device **101** through the communication means **301**, and registers the advice to hold it.

[0104] Further, when the advising means **304** newly provides the subscriber terminal device **101** with plural advices corresponding to the group to which the subscriber belongs, the advice registration means **305** obtains an advice which is newly selected by the subscriber from the subscriber terminal device **101** through the communication means **301**, and registers the advice to hold it.

[0105] A management reporting means **306** summarizes the health data stored in the storage means **302** or the advices stored in the advising means **304** into a form of a table or graph, and reports the health data or advices to the subscriber terminal device **101** through the communication means **301**, in response to a request from the subscriber terminal device **101**, or periodically. Alternatively, the management reporting means **306** outputs the health data or advices to an output means **307** which is connected to a printer, and prints the data or advices, and reports them to the subscriber or his/her family doctor by means of mail or facsimile.

[0106] A control means **310** (second control means) corresponds to a CPU of the server, and controls the above-mentioned means **301** to **307**.

[0107] Next, an example of operation of the subscriber terminal device **101** will be described with reference to a flowchart shown in **FIG. 4**.

[0108] At the subscriber terminal device end, the subscriber selects either advice display menu **402** or health data menu **404** by menu selection **401**.

[0109] When advice display menu **402** is selected, advices from the advising means **304** of the external data management center **103** are displayed, and when these advices are new **(412)**, the subscriber goes to advice selection menu **403**, and selects at least one advice that is suited to him/herself from plural advice candidates prepared. This selection is performed by that each subscriber presses an operation switch (not shown) on the operation unit **207** of the subscriber terminal unit **101**, and the selected advice is registered and stored in the advice registration means **305** of the external data management center **103**.

[0110] On the other hand, when health data menu **404** is selected, the subscriber selects one of the following menu items: health data input **405**, health data non-transmission **407**, and health data display **408**.

[0111] When health data input menu **405** is selected, the subscriber enters health data (i.e., blood sugar level and weight) using the ten key pad (not shown) of the operation unit **207**, and checks whether the inputted health data may be transmitted or not, on input data confirmation menu **406**. When transmission is OK **(416)**, the inputted data are transmitted to the external data management center **103**, and stored in the storage means **302**. When it is not OK on input data confirmation menu **406**, the subscriber returns to health data input menu **405**.

[0112] When the subscriber terminal device **101** is not connected to the communication line **102**, for example, when it is carried by the subscriber, the health data are stored in the EEPROM **204**, i.e., the health data are in the transmission-awaiting state.

[0113] When health data non-transmission menu **407** is selected, the non-transmitted health data stored in the EEPROM **204** can be transmitted to the external data management center **103** when the subscriber terminal device **101** is connected to the communication line **102** later.

[0114] When health data display menu **408** is selected, the health data and advices which are summarized in a graph or table and transmitted from the management reporting means **306** of the external data management center **103** can be displayed on the screen of the display unit **208**.

[0115] Next, a description will be given of processes for deciding the group to which a subscriber belongs, providing the subscriber with advices, making the subscriber select a suitable advice, and registering the selected advices, which processes are performed in the external data management center **103**, with reference to a block diagram shown in **FIG. 5**.

[0116] Initially, health data **502**, i.e., blood sugar level and weight, stored in a storage means **501** of the external data management center **103** are read by a group decision means **503**, and transmitted to a health data change detector **504**. In the health data change detector **504**, weight is converted into a body mass index (BMI) which is calculated by an expression, $(\text{height m})^2 \times 22$, from the height of the subscriber

which has already been registered in a subscriber height data register **505**, and an average blood sugar level and an average BMI over a predetermined period of time, for example, a month, are calculated, and thereafter, a change in the health data is checked according to whether or not the group corresponding to the calculated blood sugar level and BMI on a group table **506** is different from the group to which the subscriber belongs, which group is stored in a subscriber group data storage unit **507**. When a change in the health data is detected, a group creation unit **515** decides a new group number to which the subscriber belongs and stores the number in the subscriber group data storage unit **507**, and then notifies an advice provision unit **510** of an advising means **508** that the group to which the subscriber belongs is updated.

[**0117**] In the advising means **508**, when the group to which the subscriber belongs is updated according to a request from the subscriber terminal device **101**, the advice provision unit **510** provides the subscriber terminal device **101** with plural advice candidates on an advice table **509** which correspond to the subscriber group number stored in the subscriber group data storage unit **507**, through the communication means **520**. When the subscriber group number is not changed, an advice registered data unit **512** in which the advice candidates selected by the subscriber are stored, provides the subscriber terminal device **101** with the stored advice candidates, as practical advices.

[**0118**] The advice candidates selected by the subscriber are transmitted from the subscriber terminal device **101** through a communication means **520** to an advice registration means **511**, and an advice registration unit **513** stores the selected advice candidates in the advice registered data unit **512**, **FIG. 6** shows an example of a group table **506** of the group decision means **503**. On the group table **506**, the numbers of groups to which subscribers belong, A1 A4, B1 B4, C1 C4, are defined on the basis of the ranges into which the blood sugar levels and the body mass indexes (BMI) of the respective subscribers fall, more specifically, in the example of **FIG. 6**, the group numbers are defined by combinations of four ranges relating to blood sugar level and three ranges relating to weight.

[**0119**] The fasting blood sugar levels shown in **FIG. 6** are based on the indexes of blood sugar levels which are described in "Diabetes Treatment Guide" (Japan Diabetes Society, 1999). According to this literature, the indexes of blood sugar levels under the blood sugar controlled state are as follows. As for fasting blood sugar levels, "under 100 mg/dl" is excellent, "100 119 mg/dl" is good, and "120 139 mg/dl" is satisfactory. As for blood sugar levels two hours after a meal, "under 120 mg/dl" is excellent, "120 169 mg/dl" is good, and "170 199 mg/dl" is satisfactory. Further, the body mass indexes (BMI) are based on the indexes defined by Japan Fatness Society, and it is advisable that the BMI should be within a range from 20 to 24.

[**0120**] **FIG. 7** shows examples of advices registered on the advice table **509** of the advising means **508**. In **FIG. 7**, plural advice candidates are shown for each group, with respect to exercise and meal.

[**0121**] For example, for the group A1, three advice candidates with respect to exercise are prepared as follows: 1. Walk at a slow pace for two hours (one day), 2. Do cycling at a slow pace for one hour (one day), 3. Practice tennis for thirty minutes (one day).

[**0122**] Further, with respect to meal, three advice candidates are prepared as follows: 1. Keep moderate eating positively, 2. Keep one kind of stable food in meal, 3. Avoid subsidiary foods containing much oil.

[**0123**] Hereinafter, the operation of the whole health care system according to the first embodiment will be described. Each of subscribers transmits his/her health data from the subscriber terminal device **101** shown in **FIG. 1** through the communication line **102** to the external data management center **103**. In the external data management center **103**, the health data are stored in the storage means **302**, and the group decision means **303** classifies the subscribers into groups on the basis of the ranges into which the health data of the respective subscribers fall, and then transmits plural advice candidates to each group.

[**0124**] Each subscriber selects at least one advice candidate he/she thinks executable from the plural advice candidates displayed on the display unit **208** of the subscriber terminal device **101**, and indicates the selected advice candidate using the operation unit **207**, whereby the advice candidate suited to each subscriber is registered in the advice registration means **205** of the external data management center **103**. From the next time, the registered advice candidate is transmitted as an advice to the subscriber terminal device **101**.

[**0125**] As for a subscriber whose health data, which is periodically transmitted from the subscriber terminal device **101**, changes, if the change is outside the range of health data corresponding to the group to which the subscriber belongs at present, the group creation means **515** of the external data management center **103** removes the subscriber from the group to which the subscriber belongs at present, and enters the subscriber into another group, or makes a new group and enters the subscriber into the new group.

[**0126**] In this case, the advising means **508** transmits plural advice candidates from the advice table **509** to the subscriber the group of which has been changed. Thereafter, in the same manner as mentioned above, advices suited to the subscriber are registered in the advice registration unit **513**.

[**0127**] As described above, in the health care system according to the first embodiment, the subscribers are classified into groups on the basis of the health data transmitted from the subscribers, and plural advice candidates suited to each group are transmitted to the group. Each subscriber selects at least one advice candidate which is most suitable to him/her from the plural advice candidates, and the selected advice candidate is registered in the external data management center to be transmitted as a practical advice. When there is a change in health data of a subscriber, the group to which the subscriber belongs is changed or newly created, and advice candidates suited to the group are newly transmitted to the subscriber, and the subscriber selects an advice suited to him/her and registers it. Therefore, management of health data is facilitated, and each subscriber is provided with practicable advices at low cost, resulting in a health care system which is useful in improving or maintaining the health condition of each subscriber.

[0128] [Embodiment 2]

[0129] Hereinafter, a second embodiment of the present invention, which is defined in claims 12 26 and claims 31 42, will be described with reference to FIGS. **8** to **20**.

[0130] In this second embodiment, health improvement is promoted by supporting continuous transmission of health data from subscribers of a health care service, or realizing exchange of information relating to health among the subscribers, or spurring competition on health improvement among the subscribers.

[0131] In this second embodiment, it is premised that fasting blood sugar level, weight, and number of steps are employed as health data. Instead of blood sugar level, data relating to blood pressure value or cholesterol value may be employed.

[0132] **FIG. 8** is a conceptual diagram illustrating a health care system according to the second embodiment.

[0133] The health care system according to the second embodiment is provided with an external data management center **803** as a server, and plural subscriber terminal devices **801** which are connectable to the external data management center **803** through a communication line **802**.

[0134] While in this second embodiment a telephone line is employed as the communication line **802**, it is also possible to employ a cable TV, a network such as the Internet, or a radio communication line. Depending on the subscriber, some of these lines may be employed together.

[0135] The external data management center **803** may be installed in a data management center of a private company or the like which is independent of a medical institution, or it may be installed in a medical institution.

[0136] Each subscriber terminal device **801** may be fixed at a home of the subscriber, or it may be carried by the subscriber. The subscriber terminal device **801** may be integrated with a fixed telephone or a handy phone.

[0137] **FIG. 9** is a block diagram illustrating an example of the subscriber terminal device **801**.

[0138] First of all, the subscriber terminal device **801** is provided with, in its minimum scale, a CPU **901**, a ROM **902**, a RAM **903**, an EEPROM **904**, an I/O port **905**, a modem **906**, an operation unit **907**, and a display unit **908**.

[0139] The CPU **901** (first control means) controls the whole of the subscriber terminal device **801**.

[0140] The ROM **902** stores various kinds of programs or the like.

[0141] The RAM **903** (storage means) temporarily holds various kinds of data or the like, which are processed by the CPU **901**.

[0142] The I/O port **905** (input means) performs input/output of data and control signals to/from the modem **906**, the operation unit **907**, the display unit **908**, and the health data input part **909**.

[0143] The operation unit **907** (operation means, input means, improvement target setting means) comprises a key board, a ten key pad, switches and the like, with which the subscriber performs various kinds of operations, and input of data or information.

[0144] The display unit **908** (display means) comprises an LCD, an LED, or the like, and displays a menu from which the subscriber can select items, health data, information from the external data management center **903**, and the like, under control of the CPU **901**.

[0145] Health data are directly inputted as numeric values from the ten key pad of the operation unit **907**, and the inputted health data are stored in the RAM **903**. However, there are cases where a health data measuring unit is connected to the health data input unit **909**, and transmits data to receive health data, and where a health data measuring unit is contained in the body of the subscriber terminal device **801**, and health data are obtained using the measuring unit. Furthermore, health data, which were submitted by mail or facsimile from the subscriber to the external data management center **803** when the subscriber subscribed to the health management service, may be transferred through the communication line **802** to the subscriber terminal device **801**. In this case, the subscriber terminal device **801** can dispense with the health data input unit **909**.

[0146] The modem **906** establishes a communication line with the external data management center **803** according to the operation of the operation unit **207**, and performs transmission/reception of data to/from the center **803**. The modem **906** may be an arbitrary device which conducts communication between the subscriber terminal device **801** and the external data management center **803** through the communication line **802**. For example, a modem for ordinary telephone line, a cable modem for CATV, a modem for XDSL (ADSL, SDSL, or the like), a TA or dial-up rooter for ISDN may be employed.

[0147] The EEPROM **904** (storage means) stores the inputted health data, temporal information at measurement, information from the external data management center **803**, and the like.

[0148] **FIG. 10** is a functional block diagram illustrating an example of the external data management center **803**. The respective functions are substantially implemented by a server program possessed by the external data management center **803**.

[0149] As shown in **FIG. 10**, the external data management center **803** is given various kinds of functions which are substantially implemented by a program.

[0150] A communication means **1001** (second communication means) conducts data communication with the subscriber terminal device **801** through the communication line **802**, and conducts exchange of information between the respective functions of the external data management center **803** and the subscriber terminal device **801**.

[0151] A storage means **1002** obtains the health data of the subscriber of the health care service from the subscriber terminal device **801** through the communication means **1001**, and stores the health data.

[0152] A profile storage means **1003** stores subscriber data including subscriber's initial health data, height data, a target value of health data, individual data such as sex, hobby and the like, and a standard weight calculated from the height, which data are supplied from the subscriber terminal device **801** through the communication means **1001**.

[0153] According to Japan Fatness Society, the standard weight can be calculated from the height of the subscriber, using an expression: (height m)^2×22.

[0154] An ordinal rank decision means **1004** calculates the degree of improvement and the degree of accomplishment on the basis of the health data stored in the storage means **1002** and the subscriber data stored in the profile storage means **1003**, and decides the ordinal ranks of the subscriber among all subscribers as well as in the group to which the subscriber belongs, with respect to the degree of improvement and the degree of achievement, on the basis of the group to which the subscriber belongs, which group is stored in the group decision means **1005**, and holds the improvement rank data and the achievement rank data.

[0155] A group decision means **1005** decides the group to which the subscriber belongs, on the basis of the subscriber's sex, hobby, living style (living alone/with family) and the like, which are included in the subscriber data, and holds the decided group to which the subscriber belongs.

[0156] An electronic bulletin board means **1006** performs reading of the whole bulletin board data or articles relating to health or the like for each of groups to which the subscribers belong to, or writing of articles, in response to a request transmitted from the subscriber terminal device **801** through the communication means **1001**, thereby managing and operating the electronic bulletin board.

[0157] A point management means **1007** converts the improvement degree/achievement degree data or the frequency of transmission of health data into service points for requesting a bonus, and accumulates and manages the points earned by the subscriber. Further, the point management means **1007** provides the subscriber terminal device **801** with the accumulated points or bonus information, in response to a request transmitted from the subscriber terminal device **801** through the communication means **1001**, and provides the subscriber with a bonus requested by the subscriber, and then exchanges the points for the bonus to manage the remaining points.

[0158] This bonus is, for example, presenting the subscriber with a gift such as a product which leads to encouragement of health care or health improvement, or discounting the membership fee to the health care system.

[0159] The presentation of gift or the discount of membership fee is carried out by performing electronic commerce between the subscriber and an electronic commerce system which is employed by the manager of the health care system, but it may be manually carried out. Further, it may be consigned to an external institution.

[0160] A management reporting means **1008** summarizes, in a table or graph, the health data stored in the storage means **1002** of the external data management center **803** or the improvement degree/achievement degree/ordinal rank data stored in the ordinal rank decision means **1004**, and transmits the table or graph through the communication means **1001** to the subscriber terminal device **801**, according to a request from the subscriber terminal device **801**, or periodically. Alternatively, the management reporting means **1008** outputs the health data or the improvement degree/achievement degree/ordinal rank data to an output means **1009** which is connected to a printer, prints the data, and sends the data to the subscriber or his/her family doctor by means of mail or facsimile.

[0161] A control means **1010** (second control means) corresponds to a CPU-of the server, and controls the above-mentioned means **1001** to **1009**.

[0162] Next, an example of operation of the subscriber terminal device **801** will be described with reference to a flowchart shown in **FIG. 11**.

[0163] The subscriber terminal device **801** selects, by menu selection **1101**, one of the following menus: accumulated points **1102**, profile **1103**, health data **1104**, and electronic bulletin board **1105**.

[0164] When accumulated point **1102** is selected, the accumulated points of the subscriber, which are stored in the point management means **1007**, are displayed.

[0165] Bonus display menu **1106** displays the contents and kinds of bonuses, such as gifts, as well as the number of points required for point-to-bonus exchange, which are stored in the point management means **1007**.

[0166] On point use menu **1107**, the subscriber selects a bonus he/she desires, and sends the selected bonus information to the point management means **1007**.

[0167] Profile menu **1103** displays the profile of the subscriber which is stored in the profile registration means **1003**, i.e., the subscriber data such as the subscriber's hobby, living alone/ with family, initial health data, target values, and the like.

[0168] On profile alteration menu **1008**, the subscriber alters the subscriber data, whereby the subscriber data stored in the profile storage means **1003** is altered.

[0169] Health data menu **1104** displays the following menu items: health data input **1109**, health data non-transmission **1111**, and health data display **1112**.

[0170] When the subscriber selects health data input **1109** from the menu items, the subscriber inputs his/her health data, i.e., blood sugar level, weight, and number of steps, from the ten key pad of the operation unit **907**.

[0171] On input data confirmation menu **1110**, the subscriber checks whether the inputted data can be transmitted or not, and when transmission is OK (**1120**), the inputted data are transmitted to the external data management center **803** to be stored in the storage means **1002**.

[0172] When transmission is not OK on input data confirmation menu **1110**, the subscriber returns to health data input menu **1109** to re-input the health data.

[0173] When the subscriber terminal device **801** is carried by the subscriber and, therefore, it is not connected to the communication line **802**, the health data are stored in the EEPROM **904**, i.e., the health data are in the transmission-awaiting state.

[0174] When health data non-transmission menu **1111** is selected, the subscriber terminal device **801** can transmit the non-transmitted health data stored in the EEPROM **904** to the external data management center **803**.

[0175] When health data display menu **1112** is selected, the health data or the ordinal rank data, which are summarized in a graph or table by the management reporting means **1008** of the external data management center **803**, can be displayed.

[0176] On electronic bulletin board menu **1105**, menu information is obtained from the electronic bulletin board means **1006** and displayed.

[0177] On reading menu **1113**, articles are read from the electronic bulletin board means **1006** and displayed.

[0178] On writing menu **1114**, the subscriber can write follow-up into the articles read from electronic bulletin board means **1006**, or the subscriber can write new articles into the electronic bulletin board means **1006**.

[0179] **FIG. 12** shows examples of data to be transmitted from the subscriber terminal device **801** to the external data management center **803**, more specifically, blood sugar level **1201** and weight **1202** which are measured once a week, measurement dates **1204** and **1206**, measured data **1205** and **1207**, number-of-steps **1203** over a week, measurement week **1208**, and measured data **1209**.

[0180] **FIG. 13** shows an example of subscriber data to be entered into the profile registration means **1003**.

[0181] The subscriber data includes member ID **1300**, name **1301**, address **1302**, telephone number **1303**, sex **1304**, hobby **1305**, living alone/with family **1306**, initial values of health data, i.e., initial blood sugar level **1308** and initial weight **1310**, target values of health data, i.e., target blood sugar level **1309**, target weight **1311**, and target number of steps **1314**, standard weight **1313**, and height **1312** which is required for measurement of the standard weight.

[0182] **FIG. 14** shows an example of a flowchart for deciding groups to which subscribers belong, and hereinafter, a group deciding procedure will be described.

[0183] When subscriber data of subscribers are entered or altered in the subscriber data **1407** of the profile storage means **1405** from the subscriber terminal device **801** through the communication means **1406**, the control means (improvement target value registration means) **1010** notifies the group creation unit **1402** of the data entry or alteration in the subscriber data **1407**.

[0184] On receipt of the notification from the profile storage means **1405**, the group creation unit **1402** in the grouping means **1401** decides the group to which the subscriber belongs, on the basis of the subscriber's sex (male or female), hobby (fishing, sports, etc.), and living style (living alone or with family) which are stored in the subscriber data **1407**, as well as the group table **1403** indicating the groups to which the subscribers belong according to selection of these items, and then stores the decided group in the group data **1404**. This decision of group can be executed by, for example, a method of grouping the subscribers such that the subscribers having common items of subscriber data shown in **FIG. 13** are put in the same group.

[0185] **FIG. 15** is a block diagram for explaining calculation of the degree of improvement in health data of each subscriber relative to the standard value, calculation of the degree of achievement relative to the target value, and decision of the ordinal ranks of the improvement degree and the achievement degree. Hereinafter, a description will be given of the degree of improvement, the target value calculating procedure, the degree of achievement, and the procedure for deciding the ordinal rank of the health data of the subscriber.

[0186] The improvement degree/achievement degree calculation unit (health data improvement degree calculation means, target value achievement degree calculation means) **1515** calculates the degrees of improvement with respect to the blood sugar level and weight of the subscriber, and the degrees of achievement with respect to the blood sugar level, weight, and number-of-steps, on the basis of the blood sugar level **1503**, weight **1504**, and number-of-steps **1505** which are the health data **1502** stored in the storage means **1501**, as well as the initial blood sugar level **1508**, target blood sugar level **1509**, initial weight **1510**, target weight **1511**, standard weight **1512**, target number-of-steps **1513**, and standard blood sugar level **1514** which are the subscriber data **1507** stored in the profile storage means **1506**. The results of the improvement degree/achievement degree calculations are stored in the improvement degree/achievement degree data storage unit **1523**.

[0187] In the improvement degree/achievement degree calculation unit **1515**, the degree of improvement in the blood sugar level is calculated by an expression:

(initial blood sugar level **1508**−blood sugar level **1503**)/(initial blood sugar level **1508**−standard blood sugar level **1514**)×100;

[0188] the degree of improvement in the weight is calculated by an expression:

(initial weight **1510**−weight **1504**)/(initial weight **1510**−standard weight **1512**)×100;

[0189] the degree of achievement in the blood sugar level is calculated by an expression:

(initial blood sugar level **1508**−blood sugar level **1503**)/(initial blood sugar level **1508**−target blood sugar level **1509**)×100;

[0190] the degree of achievement in the weight is calculated by an expression:

(initial weight **1510**−weight **1504**)/(initial weight **1510**−target weight **1511**)×100;

[0191] and the degree of achievement in the number-of-steps is calculated by an expression:

number-of-steps **1505**/target number-of-steps **1513**.

[0192] Although the standard blood sugar level **1514** may be an arbitrary value, "Diabetes Treatment Guide" (Japan Diabetes Society, 1999) describes the indexes of blood sugar levels. According to this literature, the indexes of blood sugar levels under the blood sugar controlled state are as follows. As for fasting blood sugar levels, "under 100 mg/dl" is excellent, "100 119 mg/dl" is good, and "120 139 mg/dl" is satisfactory. As for blood sugar levels two hours after a meal, "under 120 mg/dl" is excellent, "120 169 mg/dl" is good, and "170 199 mg/dl" is satisfactory. The fasting blood sugar level 100 mg/dl which is excellent is employed as the standard blood sugar level **1514**.

[0193] The ordinal ranks with respect to the degree of improvement and the degree of achievement are calculated for all of the subscribers by the ordinal rank calculation unit **1517** using the improvement degree/achievement degree data **1523**, and furthermore, the ordinary ranks are also calculated for the subscribers in each group on the basis of the subscriber group data **1522**. The ordinal ranks thus obtained are stored in ordinal rank data **1519**.

[0194] Further, the degree of improvement or the degree of achievement can be easily calculated by calculating

averages of the blood sugar level **1503**, weight **1504**, and number-of-steps **1505** in the subscriber health data **1502** over a predetermined period of time and, thereafter, the ordinary ranks may be calculated on the basis of the averages.

[**0195**] When there is a request from the subscriber terminal device **801** through the communication means **1520**, the management reporting means **1521** summarizes the health data **1502**, improvement degree/achievement degree data **1523**, and ordinal rank data **1519** into a table or graph, and transmits the table or graph to the subscriber terminal device **801**.

[**0196**] **FIG. 16** shows examples of health data **1502**, improvement degree/achievement degree data **1523**, and ordinal rank data **1519**, which are to be transmitted from the management reporting means **1521** to the subscriber terminal device **801**.

[**0197**] In **FIG. 16**, "first week data"**1606**, "second week data"**1607**, "third week data"**1608**, and "fourth week data"**1609** indicate the data of blood sugar level, weight, and number of steps, which are measured by the subscriber once a week; "average data"**1601** indicates the average of each measured data; "improvement relative to standard value"**1602** and "achievement relative to target value" indicate the improvement degree/achievement degree data **1523**; and "rank of improvement degree relative to standard value"**1604** and "rank of achievement degree relative to target value"**1605** indicate the ordinal rank data **1519**.

[**0198**] **FIG. 17** is a block diagram illustrating an electronic bulletin board means of the external data management center.

[**0199**] When a request to use the electronic bulletin board **1105** is transmitted from the subscriber terminal device **801** through the communication means **1701** to the electronic bulletin board means **1702**, the electronic bulletin board management unit **1703** creates a menu into which all of the subscribers can write data, and a group-specified menu which is set by the group data **1706** indicating the group to which the subscriber belongs, on the basis of the setting of the menu setting unit **1704**, and transmits these menus to the electronic bulletin board **1105**.

[**0200**] When the subscriber terminal device **801** issues a request to read an article, the electronic bulletin board management unit **1703** reads the article from the bulletin board data **1707**, and transmits it to the subscriber terminal device **801**.

[**0201**] When the subscriber terminal device **801** issues a request to write an article, the electronic bulletin board management unit **1703** writes the article in the electronic bulletin board data **1707**.

[**0202**] **FIG. 18** is a block diagram for explaining a system for encouraging transmission of health data, utilizing points.

[**0203**] In a point management means **1801**, a point calculation unit **1811** periodically (e.g., every month) converts improvement degree data and achievement degree data **1805** included in improvement degree/achievement degree data **1803** stored in an ordinal rank decision means **1802**, and the frequency of transmission of health data from the subscriber terminal device in a month, which is calculated by a frequency-of-transmission calculation unit **1808** from health data **1807** stored in a storage means **1806**, into points with reference to a point conversion table **1810** of a point management means **1801**, and stores the points in a point data storage unit **1821**.

[**0204**] The point data storage unit **1821** stores a statement of points earned in this month, a total of points in this month, a total of points at the end of the last month, used points in this month, and available points at the end of this month.

[**0205**] When there is a request for accumulated points **1102**, which requests information about the points earned by the subscriber, from the subscriber terminal device **801** through the communication means **1812**, the point management unit **1813** provides the subscriber terminal device **801** with the data of the points of the subscriber, which data is stored in the point data storage unit **1821**.

[**0206**] When there is a request for bonus display **1106** from the subscriber terminal device **801** through the communication means **1812**, the point management unit **1813** provides the subscriber terminal device **801** with information of bonus table **1814** which contains bonuses such as gifts, and the number of points required for exchange for each bonus.

[**0207**] When there is a request for point use **1107** from the subscriber terminal device **801** through the communication means **1812**, the point management unit **1813** sends the used points corresponding to the bonus selected by the subscriber, to the point calculation unit **1811**, and the point calculation unit **1811** subtracts the used points from the accumulated points to calculate the latest accumulated point, thereby updating the point data storage unit **1821**. Further, the bonus information used by the subscriber is entered into bonus issuance data **1815**, and the bonus is issued to the subscriber according to the data.

[**0208**] **FIG. 19** shows an example of a point conversion table **1810** to be used for conversion of the improvement degree data and achievement degree data which are stored in the improvement degree/achievement degree data **1803**, and the frequency of transmission of health data, into points.

[**0209**] In the example of **FIG. 19**, five points are added to the accumulated points when the degree of improvement or the degree of achievement is equal to or higher than 100%, and four points are added when the frequency of transmission of health data is equal to or larger than four times in a month.

[**0210**] **FIG. 20** shows an example of data of accumulated points to be transmitted to the subscriber terminal device **801**.

[**0211**] In the example of **FIG. 20**, as well as the numeric values indicating the degrees of improvement or achievement in the blood sugar level, weight, and number of steps, the earned points corresponding thereto are displayed, and further, a total of points earned in this month, accumulated points in the last month, used points in this month, and accumulated point at the end of this month are displayed.

[**0212**] Hereinafter, a description will be given of the operation of the whole health care system according to the second embodiment. The subscribers sends their profile data from the subscriber terminal devices **801** through the communication line to the external data management center **803**. In the external data management center **803**, the transmitted

profile data are stored in the profile storage means **1003**, and the group decision means **1005** groups the subscribers on the basis of the stored profile data. This grouping is carried out such that the subscribers having common items of profile data are put in the same group.

[**0213**] Further, each of the subscribers sends his/her health data and the target value of improvement in the health data, from the subscriber terminal device **801** through the communication line **802** to the external data management center **803**. In the external data management center **803**, the degree of improvement in the transmitted health data, the degree of achievement to the target value, and the frequency of transmission of health data, are calculated with reference to the stored target value, and issues service points on the basis of the result of the calculation. Accumulation of the service points becomes one of motivations of the subscriber to have an aspiration for health improvement.

[**0214**] Further, topics on health or stories of experiences are shown on the electronic bulletin board, and the subscribers can obtain information to refer to, whereby health improvement is encouraged more strongly than in the case where each subscriber tackles with health improvement by him/herself.

[**0215**] Furthermore, since the data of the subscribers in the same group are displayed on the electronic bulletin board, the posture or aspiration of each subscriber for health improvement is further enhanced by, for example, competing with another subscriber in the number of points.

[**0216**] As described above, according to the health care system of this second embodiment, the health data transmitted from the subscriber is converted into service points with reference to the degree of improvement, degree of achievement, and the frequency of transmission, and a bonus is issued on the basis of the points, information on health improvement from another subscriber is displayed on the electronic bulletin board, or the subscribers compete each other in the number of points, whereby health improvement is encouraged. Therefore, it is possible to realize a health care system which contributes to health improvement with far less labor than in the case where each subscriber tackles with health improvement by him/herself.

[**0217**] [Modification of Embodiment 2]

[**0218**] As shown in **FIG. 21**, an advising means **2111** may be added to the construction corresponding to the external data management center according to the second embodiment shown in **FIG. 8**, thereby automatically creating advices suited to each subscriber.

[**0219**] **FIG. 22** shows the construction of the advising means in this case. With reference to **FIG. 22**, an advice selection means **2213** selects an advice candidate which is considered most suitable for the subscriber, from an advice table **2212**, after checking the life style and health condition of the subscriber and the situation of the group to which the subscriber belong, with reference to the contents stored in a profile registration means **2203** (corresponding to **2103** in **FIG. 21**), and the contents stored in a rank decision means **2204** (**2104** in **FIG. 21**) and a group decision means **2205** (**2105** in **FIG. 21**) and, thereafter, transmits the selected advice candidate, as an advice, to the communication means **2201**. This selection may be carried out on the basis of an inference rule or a neural technology.

[**0220**] On the other hand, an electronic bulletin board means **2306** may be provided with various kinds of functions as shown in **FIG. 23**.

[**0221**] That is, an access permission means **2307** decides whether an access is from an authorized subscriber or not, according to pass words or the like.

[**0222**] Next, even when the access is from an authorized subscriber, a topic checking means **2309** checks the contents as to whether it relates to health or not. This check can be carried out by referring to dictionary data in which words relating to health are entered.

[**0223**] When the topic is other than health, a display rejection notification means **2308** may give a warning by E-mail to the subscriber who has sent the contribution.

[**0224**] Further, a contribution which has passed the check by the topic checking means **2309** is displayed on the bulletin board by a display registration means **2310**. An excellent subscriber searching means **2311** searches the ordinal ranks decided by the rank decision means **2304** for an excellent subscriber with respect to the degree of improvement or the degree of target achievement, and a story-of-experience collecting mail issuance means **2312** issues an E-mail which encourages the excellent subscriber to contribute a story of his/her experience.

[**0225**] Further, when a new contribution is displayed on the electronic bulletin board, a display notification means **2313** may send E-mail which informs all subscribers of the new contribution, or the group decision means **2305** may send the displayed contents as reference mail to the subscribers who belong to the group for which the displayed contents will be helpful. When the state where no subscriber views the electronic bulletin board continues over a predetermined period of time, an automatic distribution means **2315** may distribute the contents displayed on the bulletin board to the subscribers by E-mail.

[**0226**] Furthermore, as shown in **FIG. 24**, the point management means **1407** may be provided with a point shortfall calculation means **2408** and a mail notification means **2409**. In this case, the point shortfall calculation means **2408** calculates a shortfall in accumulated points required for exchanging the points for a bonus such as a gift, and the mail notification means **2401** notifies the corresponding subscriber of the shortfall in accumulated points through the communication means **2401**.

[**0227**] While the present invention has been particularly shown and described with reference to the preferred mode as illustrated in the drawing, it will be understood by one skilled in the art that various changes in detail may be effected therein without departing from the spirit and scope of the invention as defined by the claims.

We claim:

1. A health care system for exchanging data of predetermined subscribers between plural subscriber terminal devices and a data management center through a communication line, wherein

each of the subscriber terminal devices comprises:

an input means for inputting health data of the corresponding subscriber;

a storage means for holding the health data inputted by the input means;

a first communication means for performing data communication with the data management center;

a display means for displaying the health data inputted by the input means, and information transmitted from the data management center; and

an operation means with which the subscriber performs a series of operations; and

the data management center comprises:

a second communication means for performing data communication with each of the respective subscriber terminal devices;

a storage means for holding health data transmitted from each of the subscriber terminal devices;

a group decision means for deciding a group to which each subscriber belongs, on the basis of plural pieces of health data obtained from the storage means; and

an advising means for providing each subscriber terminal device with plural advice candidates which are common to subscribers in the group to which the subscriber terminal device belongs, through the second communication means.

2. A health care system as defined in claim 1, wherein the subscriber terminal device further includes an advice selection means for selecting at least one advice candidate which is desired by the corresponding subscriber, from the plural advice candidates supplied from the advising means.

3. A health care system as defined in claim 2, wherein

the data management center further includes an advice registration means for holding the advice candidate selected by the advice selection means; and

the data management center provides the subscriber terminal device with the advice candidate stored in the advice registration means, as an advice, by the advising means.

4. A health care system as defined in claim 1, wherein

the group decision means remakes the group to which the subscriber belongs, according to a change in the health data transmitted from the subscriber terminal device; and

the advising means provides the subscriber terminal device with plural advice candidates which are common to the subscribers who belong to the remade group.

5. A health care system as defined in claim 1, wherein the health data includes data relating to blood sugar level, and weight or body mass index (BMI).

6. A health care system as defined in claim 1, wherein the health data includes data relating to blood pressure, and weight or body mass index (BMI).

7. A health care system as defined in claim 1, wherein the health data includes data relating to cholesterol, and weight or body mass index (BMI).

8. A health care system as defined in claim 1, wherein the health data includes data relating to neutral fat, and weight or body mass index (BMI).

9. A health care system as defined in claim 1, wherein the health data includes data relating to glutamic acid oxaloacetic acid transaminase (GOT), and weight or body mass index (BMI).

10. A health care system as defined in claim 1, wherein the health data includes data relating to glutamic acid pyrivic acid transaminase (GPT), and weight or body mass index (BMI).

11. A health care system as defined in claim 1, wherein the health data includes data relating to γ-glutamyl transpeptidase (γ-GTP), and weight or body mass index (BMI).

12. A health care system for exchanging data of predetermined subscribers between plural subscriber terminal devices and a data management center through a communication line, wherein

each of the subscriber terminal devices comprises:

an input means for inputting health data;

a storage means for holding the health data inputted by the input means;

a first communication means for performing data communication with the data management center;

a display means for displaying the health data and information from the data management center; and

an operation means with which the subscriber performs a series of operations; and

the data management center comprises:

a second communication means for performing data communication with the subscriber terminal devices; and

an ordinal rank decision means for deciding the ordinal ranks of the health data among the plural subscribers, on the basis of the health data which are obtained from the storage means for holding the health data transmitted from the subscriber terminal devices.

13. A health care system as defined in claim 12, wherein

the ordinal rank decision means includes a health data improvement degree calculation means for calculating the degree of improvement in the health data of each subscriber by comparing the health data with a standard value or an index value; and

the ordinal rank according to the degree of improvement is employed as the ordinal rank of the health data.

14. A health care system as defined in claim 12, wherein the subscriber terminal device further includes an improvement target setting means for setting an improvement target value of the health data.

15. A health care system as defined in claim 12, wherein

the data management center further includes an improvement target value registration means for holding the improvement target value which is set by the improvement target setting means of claim 14, through the second communication means;

the ordinal rank decision means includes a target value achievement degree calculation means for calculating the degree of achievement to the improvement target value of the subscriber, which is stored in the improvement target value registration means; and

the ordinal rank according to the degree of achievement is employed as the ordinal rank of the health data.

16. A health care system for exchanging data of predetermined subscribers between plural subscriber terminal devices and a data management center through a communication line, wherein

each of the subscriber terminal devices comprises:

an input means for inputting health data and information;

a storage means for holding the health data and information which are inputted by the input means;

a first communication means for performing data communication with the data management center;

a display means for displaying the health data and information from the data management center; and

an operation means with which the subscriber performs a series of operations; and

the data management center comprises:

a second communication means for performing data communication with the subscriber terminal devices;

a storage means for holding the health data transmitted from the subscriber terminal devices; and

an electronic bulletin board means in/from which topics or the like relating to health can be written or read by the subscriber terminal devices through the second communication line.

17. A health care system for exchanging data of predetermined subscribers between plural subscriber terminal devices and a data management center through a communication line, wherein

each of the subscriber terminal devices comprises:

an input means for inputting health data and information;

a storage means for holding the health data and information which are inputted by the input means;

a first communication means for performing data communication with the data management center;

a display means for displaying the health data and information from the data management center; and

an operation means with which the subscriber performs a series of operations; and

the data management center comprises:

a second communication means for performing data communication with the subscriber terminal devices;

a storage means for holding the health data transmitted from the subscriber terminal devices;

a profile registration means for holding profile data of each subscriber, such as sex, hobby and the like; and

a group decision means for deciding a group to which each subscriber belongs, on the basis of the stored profile data of the subscriber.

18. A health care system as defined in claim 17, wherein the data management center further includes an ordinal rank decision means for deciding the ordinal ranks of the health data among the subscribers in the group to which the subscribers belong, which group is created by the group decision means on the basis of the health data obtained from the storage means.

19. A health care system as defined in claim 18, wherein

the ordinal rank decision means includes a health data improvement degree calculation means for calculating the degree of improvement in the health data of each subscriber by comparing the health data with a standard value or an index value; and

the ordinal rank based on the degree of improvement is employed as the ordinal rank of the health data.

20. A health care system as defined in claim 17, wherein the subscriber terminal device includes an improvement target setting means for setting an improvement target value of the health data.

21. A health care system as defined in claim 17, wherein

the data management center includes an improvement target value registration means for holding the improvement target value which is set by the improvement target setting means of claim 20, through the second communication means;

the health data ordinal rank decision means of claim 18 includes a target value achievement degree calculation means for calculating the degree of achievement to the improvement target value of each subscriber, which target value is stored in the improvement target value registration means that decides the ordinal ranks of the health data among the subscribers in the group to which the subscribers belong; and

the ordinal rank according to the degree of achievement is employed as the ordinal rank of the health data of each subscriber.

22. A health care system as defined in claim 17, wherein the data management center includes an electronic bulletin board means in/from which topics or the like relating to health can be written or read by the subscriber terminal devices through the second communication means, only in the group to which the subscribers belong, which group is created by the group decision means.

23. A health care system as defined in claim 12 or **17** further including a point management means for

converting at least one of the degree of improvement described in claim 13, the degree of achievement described in claim 15, and the number of transmission of the health data which are obtained from the storage means for holding the health data transmitted from the subscriber terminal device, into service points (hereinafter, referred to simply as points),

accumulating and managing the points, and sending the accumulated points and bonus information such as gifts to the subscriber terminal device through the second communication means, when there is a request to use the points from the subscriber terminal device through the second communication means, and

when there is a request for a bonus such as a gift from the subscriber terminal device, exchanging the points corresponding to the bonus, for the bonus.

24. A health care system as defined in any of claims **12**, **16**, **17**, and **23**, wherein the health data includes data relating to blood sugar level, weight, and number of steps.

25. A health care system as defined in any of claims **12**, **16**, **17**, and **23**, wherein the health data includes data relating to blood pressure, weight, and number of steps.

26. A health care system as defined in any of claims **12**, **16**, **17**, and **23**, wherein the health data includes data relating to cholesterol, weight, and number of steps.

27. A health care system as defined in claim 1, wherein

the subscriber terminal device further includes a first control means for controlling the respective means constituting the subscriber terminal device;

the data management enter further includes a second control means for controlling the respective means constituting the data management center;

the first control means controls the first communication means so as to transmit the health data of the subscriber, which is inputted from the input means;

the second control means controls the second communication means so as to receive the health data;

the second control means controls the group decision means so as to decide a group to which the subscriber belongs, on the basis of the health data; and

the second control means controls the advising means so as to create advice candidates suited to the group.

28. A health care system as defined in claim 27, wherein

the first control means controls the first communication means so as to receive the advice candidates;

the first control means controls the display means of claim 1 so as to display the advice candidates; and

the first control means controls the first communication means so as to transmit an advice candidate selected by the input means of claim 1.

29. A health care system as defined in claim 27, wherein

the second control means controls the second communication means so as to receive the selected advice candidate described in claim **28**;

the second control means controls the storage means of claim 1 so as to hold at least one advice candidate received; and

the second control means controls the second communication means so as to transmit the stored advice.

30. A health care system as defined in claim 27, wherein

the second control means controls the group decision means so as to remake the group according to a change in the health data transmitted through the first communication means; and

the second control means controls the second communication means so as to transmit plural advice candidates which are common to the remade group.

31. A health care system as defined in claim 12, wherein

the subscriber terminal device further includes a first control means for controlling the respective means constituting the subscriber terminal device;

the data management center further includes a second control means for controlling the respective means constituting the data management center;

the first control means controls the first communication means so as to transmit the health data;

the second control means controls the second communication means so as to receive the health data; and

the second control means controls the ordinal rank decision means so as to decide the ordinal ranks among the subscribers on the basis of the health data.

32. A health care system as defined in claim 31, wherein the second control means controls the ordinal rank decision means so as to calculate the degree of improvement in the health data of each subscriber by comparing the health data with a standard value or an index value, as the ordinal rank of the heath data.

33. A health care system as defined in claim 31, wherein the first control means controls the first communication means so as to transmit the improvement target value of the health data which is inputted by the input means of claim 12, thereby setting the improvement target value.

34. A health care system as defined in claim 31, wherein

the second control means controls the second communication means so as to receive the improvement target value described in claim 33, and controls the storage means of claim 12 so as to hold the improvement target value;

the second control means controls the ordinal rank decision means so as to calculate the degree of achievement on the basis of the health data received from the second communication means and the stored improvement target value; and

the second control means controls the ordinal rank decision means so as to decide the ordinal rank of the health data according to the rank based on the degree of achievement.

35. A health care system as defined in claim 16, wherein

the subscriber terminal device further includes a first control means for controlling the respective means constituting the subscriber terminal device;

the data management center further includes a second control means for controlling the respective means constituting the data management center;

the first control means controls the first communication means so as to transmit topics relating to health or the like;

the second control means controls the second communication means so as to receive the topics relating to health or the like; and

the second control means control the electronic bulletin board means so as to display the received topics.

36. A health care system as defined in claim 17, wherein

the subscriber terminal device further includes a first control means for controlling the respective means constituting the subscriber terminal device;

the data management center further includes a second control means for controlling the respective means constituting the data management center;

the first control means controls the first communication means so as to transmit profile data of the subscriber;

the second control means controls the second communication means so as to receive the profile data, and controls the storage means so as to hold the profile data; and

the second control means controls the group decision means so as to decide the group to which the subscriber belongs, on the basis of the profile data stored in the storage means.

37. A health care system as defined in claim 36, wherein the second control means controls the ordinal rank decision means of claim 31 so as to decide the ordinal rank of the health data within the group to which the subscriber belongs, which group is decided by the group decision means.

38. A health care system as defined in claim 37, wherein

the second control means controls the second communication means of claim 36 so as to receive the health data of the subscriber; and

the second control means controls the ordinal rank decision means of claim 17 so as to calculate the degree of achievement by comparing the received health data with a standard value or an index value.

39. A health care system as defined in claim 36, wherein the first control means controls the first communication means so as to transmit the improvement target value of the health data which is inputted by the input means of claim 17.

40. A health care system as defined in claim 36, wherein

the second control means controls the second communication means so as to receive the improvement target value described in claim **33**;

the second control means controls the storage means so as to hold the received improvement target value; and

the second control means control the ordinal rank decision means of claim 31 so as to calculate the degree of achievement to the improvement target value of the subscriber.

41. A health care system as defined in claim 36, wherein the second control means controls the electronic bulletin board means of claim 22 so as to permit only the subscribers decided by the group decision means to read or write data from/in the bulletin board means.

42. A health care system as defined in claim 31 or **36**, wherein

the second control means controls the point management means of claim 23 so as to convert at least one of the degree of improvement calculated by the health data improvement degree calculation means of claim 13, the degree of target achievement calculated by the target achievement degree calculation means of claim **15**, and the number of transmission of the health data obtained from the storage means, into service points (hereinafter referred to simply as points);

the first control means controls the first communication means so as to transmit a request to use the points, which request is inputted from the input means of claim **17**;

the second control means controls the second communication means so as to transmit information about bonuses which can be obtained using the points;

the first control means controls the first communication means so as to receive the bonus information;

the first control means controls the first communication means so as to transmit the bonus information selected by the input means; and

the second control means controls the point management means so as to exchange the points for the bonus corresponding to the selected bonus information.

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专利名称(译)	医疗系统		
公开(公告)号	US20020123908A1	公开(公告)日	2002-09-05
申请号	US10/078307	申请日	2002-02-19
[标]申请(专利权)人(译)	安靖 西川CHIE 土肥HIROSHI		
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IPC分类号	A61B5/00 A61B5/145 G06Q10/00 G06Q50/00 G06Q50/10 G06Q50/22 H04M11/00 G06F17/60		
CPC分类号	G06F19/322 G06F19/327 G06F19/3418 G06Q10/10 G06Q50/22 G16H10/60 G16H40/20		
优先权	2001040713 2001-02-16 JP		
外部链接	Espacenet USPTO		

摘要(译)

医疗保健系统包括多个用户终端设备，数据管理中心和将用户终端设备连接到数据管理中心的通信线路，其中每个用户终端设备包括用于输入相应用户的健康数据的输入装置，存储器用于保持输入的健康数据的装置，用于与数据管理中心进行数据通信的第一通信装置，用于显示来自数据管理中心的健康数据和信息的显示装置，以及用户执行一系列操作装置的操作装置。操作;数据管理中心包括用于与每个用户终端设备进行数据通信的第二通信装置，用于保存从每个用户终端设备发送的健康数据的存储装置，用于决定每个用户所属的组的组决定装置从存储装置获得的多个健康数据，以及建议装置，用于通过第二通信装置向每个用户终端设备提供多个建议候选，这些建议候选对于用户终端设备所属的组中的用户是共同的。因此，医疗保健系统可以鼓励每个用户连续测量健康数据并将健康数据发送到外部数据管理中心。