

**Supplementary Table DS1: Comparison of selected socio demographic characteristics between respondents and non-respondents in Health survey data 2010/2011(17030)**

Characteristics	Respondents(13983)		Non-respondents(3047)		P value
	N	%	N	%	
<b>Sex</b>					
Male	6145	43.9	1379	45.3	<b>0.187</b>
Female	7838	56.1	1668	54.7	
<b>Age(10 year bands)</b>					
16-34	3539	25.3	633	20.8	<b>&lt;0.001</b>
35-54	5048	36.1	920	30.2	
55+	5396	38.6	1494	49.0	
<b>Marital Status</b>					
Single	2631	18.8	549	18.0	<b>&lt;0.001</b>
Married/Civil partnership	7388	52.9	1585	52.1	
Separated	355	2.5	73	2.4	
Divorced	949	6.8	171	5.6	
Widowed	960	6.9	386	12.7	
Cohabitees	1696	12.1	278	9.1	
Missing	4	0.1	5	0.1	
<b>Education</b>					
NVQ4/NVQ5/Degree or equivalent	3351	24.0	450	15.0	<b>&lt;0.001</b>
Higher education below degree	1595	11.4	244	8.1	
NVQ3/GCE A Level equivalent	2204	15.8	284	9.5	
NVQ2/GCE O Level equivalent	3180	22.8	536	17.9	
NVQ1/CSE other grade equivalent	635	4.5	178	5.9	
Foreign/other	231	1.7	47	1.6	
No qualification	2768	19.8	1255	41.9	
Missing	53	1.7	19	0.1	
<b>Equivalent income*</b>					
Lowest (<=£11676.65)	1787	12.8	547	18.0	<b>P&lt;0.001</b>
Second lowest (>£11676.65-<=19117.65)	2228	15.9	512	16.8	

Middle (>£19117.65-<=27704.92)	2346	16.8	398	13.1	
Second highest (>27704.92-<=47794.12)	2567	18.4	265	8.7	
Highest (>£47794.12)	2586	18.5	285	2586	
Missing	2469	17.6	1037	34.1	
<b>Employment</b>					
In employment	7779	55.6	1225	40.2	<0.001
Unemployed seeking work	696	5.0	125	4.1	
Retired	3428	24.5	1047	34.4	
Other economically inactive	2057	14.7	604	19.8	
Missing	23	0.2	46	1.5	
<b>Religion</b>					
No religion	3689	26.4	331	10.9	<0.001
Christian and other denominators	9299	66.5	1472	48.3	
Muslims	384	2.7	146	4.8	
Any other	518	3.7	89	2.9	
Missing	93	0.7	1009	33.1	
<b>Ethnicity</b>					
White	12434	88.9	2422	79.5	<0.001
Indian and Pakistani	394	2.8	144	4.7	
African Caribbean	695	5.0	257	8.4	
Chinese and Other Asian mix	297	2.1	117	3.8	
Other	147	1.1	58	1.9	
Missing	16	0.1	49	1.6	

**Table DS2 Baseline Characteristics of participants by category of WEMWBS groups in HSE 2010/2011 data**

Variable	WEMWBS Score			<i>p</i> Value
	Low(14-42)	Middle (43-59)	High(60+)	
	N (%)	N(%)	N(%)	
<b>No. of subjects(13983)</b>	2252(16.1)	9446(67.6)	2285(16.3)	
<b>Age</b>				P<0.001
16-34	553(24.6)	2467(26.1)	519(22.7)	
35-54	904(40.1)	3467(36.7)	677(29.6)	
55+	795(35.3)	3512(37.2)	1089(47.7)	
<b>Gender</b>				P=0.041
Male	936(41.6)	4185(44.3)	1024(44.8)	
Female	1316(58.4)	5261(55.7)	1261(55.2)	
<b>Marital status</b>				P<0.001
Single	560(24.9)	1711(18.1)	360(15.8)	
Married/Civil partnership/cohabitees	1205(53.5)	6320(66.9)	1559(68.2)	
Separated/Divorced/Widowed	484(21.5)	1415(15.0)	365(16.0)	
Missing	3(0.1)	0(0.0)	1(0.0)	
<b>Education</b>				P<0.001
NVQ4/NVQ5/Degree or equivalent	327(14.5)	2442(25.9)	582(25.5)	
Higher education below degree	203(9.0)	1095(11.6)	297(13.0)	
NVQ3/GCE A Level equivalent	335(14.9)	1526(16.2)	343(15.0)	
NVQ2/GCE O Level	591(26.2)	2143(22.7)	446(19.5)	
NVQ1/CSE other grade equivalent	134(6.0)	395(4.2)	106(4.6)	
Foreign/other	27(1.2)	151(1.6)	53(2.3)	
No qualifications	631(28.0)	1681(17.8)	456(20.0)	
Missing	4(0.2)	13(0.1)	2(0.1)	
<b>Equivalised income*</b>				P<0.001
Lowest (<=£11676.65)	519(23.0)	1015(10.7)	253(11.1)	
Second lowest (>£11676.65-<=19117.65)	420(18.7)	1476(15.6)	332(14.5)	
Middle (>£19117.65-<=27704.92)	354(15.7)	1619(17.1)	373(16.3)	
Second highest (>27704.92-<=47794.12)	276(12.3)	1863(19.7)	428(18.7)	
Highest (>£47794.12)	256(11.4)	1857(19.7)	473(20.7)	

Missing	427(19.0)	1616(17.1)	426(18.6)	
<b>Employment</b>				P<0.001
In employment	975(43.3)	5621(59.5)	1183(51.6)	
Unemployed seeking work	1439(6.3)	445(4.7)	108(4.7)	
Retired	525(23.3)	2182(23.1)	721(31.6)	
Other economically inactive	605(26.9)	1181(12.5)	271(11.9)	
Missing	4(0.2)	17(0.2)	2(0.1)	
<b>Religion</b>				P<0.001
No religion	618(27.4)	2562(27.1)	509(22.3)	
Christian and other denominators	1487(66.0)	6235(66.0)	1577(69.0)	
Muslims	60(2.7)	254(2.7)	70(3.1)	
Any other	72(3.2)	333(3.5)	113(4.9)	
Missing	15(0.7)	62(0.7)	16(0.7)	
<b>Ethnicity</b>				P<0.001
White	2064(91.7)	8419(89.1)	1951(85.4)	
Indian and Pakistani	61(2.7)	242(2.5)	91(4.0)	
African Caribbean	57(2.5)	487(5.2)	151(6.6)	
Chinese and Other Asian mix	44(2.0)	195(2.1)	58(2.5)	
Other	23(1.0)	93(1.0)	31(1.4)	
Missing	3(0.1)	10(0.1)	3(0.1)	

**Table DS3 Univariate (Model 1), partially adjusted (age and sex )(Model 2)and fully adjusted\* (Model 3) Odds Ratios for Low Mental Well-being (WEMWBS 14-42) referenced to Middle-Range Mental Well-being (WEMWBS 43-59)**

	<b>Model 1 Unadjusted OR (95% CI)</b>	<b>Model 2 Partially adjusted OR (95% CI)</b>	<b>Model 3 Fully adjusted OR (95% CI)</b>	<b>P value for linear trend</b>	<b>P for interaction with sex</b>
<b>Age</b>					
16-34	Ref	Ref	Ref		
35-54	1.16(1.03-1.31)	1.16(1.03-1.31)	<b>1.58</b> (1.35-1.84)		
55+	1.01(0.90-1.14)	1.01(0.90-1.14)	0.96(0.77-1.18)		
<b>Gender</b>					
Male	Ref	Ref	Ref		
Female	<b>1.12</b> (1.02-1.23)	<b>1.12</b> (1.02-1.23)	1.04(0.68-1.58)		
<b>Marital status</b>					
Single	Ref		Ref		0.092
Married/Civil partnership/cohabitees	<b>0.58</b> (0.52-0.65)	<b>0.56</b> (0.50-0.64)	<b>0.78</b> (0.62-0.97)		
Separated/Divorced/Widowed	1.05(0.91-1.20)	0.97(0.83-1.15)	1.24(0.92-1.68)		
<b>Education</b>					
NVQ4/NVQ5/Degree or equivalent	Ref	Ref	Ref	0.001	
Higher education below degree	<b>1.38</b> (1.15-1.67)	<b>1.45</b> (1.20-1.76)	1.03(0.76-1.41)		
NVQ3/GCE A Level equivalent	<b>1.64</b> (1.39-1.93)	<b>1.59</b> (1.35-1.88)	1.28(0.96-1.72)		
NVQ2/GCE O Level	<b>2.06</b> (1.78-2.39)	<b>2.08</b> (1.79-2.41)	<b>1.35</b> (1.03-1.77)		
NVQ1/CSE other grade equivalent	2.53(2.02-3.18)	2.60(2.07-3.27)	1.47(0.99-2.19)		
No qualification	<b>2.80</b> (2.42-3.25)	<b>3.08</b> (2.64-3.60)	<b>2.00</b> (1.50-2.68)		
<b>Equivalised income</b>					
Highest (>£47794.12)	Ref	Ref	Ref	0.001	
Second highest (>27704.92-<=47794.12)	1.08(0.90-1.30)	1.07(0.90-1.29)	0.92(0.70-1.22)		
Middle (>£19117.65-<=27704.92)	<b>1.57</b> (1.33-1.89)	<b>1.59</b> (1.34-1.90)	1.24(0.94-1.63)		
Second lowest (>£11676.65-<=19117.65)	<b>2.06</b> (1.74-2.45)	<b>2.07</b> (1.74-2.45)	<b>1.40</b> (1.05-1.87)		
Lowest (<=£11676.65)	<b>3.71</b> (3.14-4.39)	<b>3.69</b> (3.12-4.36)	1.19(0.79-1.78)		
<b>Employment</b>					
In employment	Ref	Ref	Ref		

Unemployed seeking work	<b>1.85</b> (1.52-2.26)	<b>1.90</b> (1.55-2.33)	<b>1.46</b> (1.01-2.10)
Retired	<b>1.39</b> (1.23-1.56)	<b>1.30</b> (1.12-1.49)	1.11(0.85-1.47)
Other economically inactive	<b>2.95</b> (2.62-3.33)	<b>2.97</b> (2.63-3.35)	<b>2.89</b> (2.21-3.78)

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**Religion**

No religion	Ref	Ref	Ref
Christian and other denominators	0.99(0.89-1.10)	0.98(0.88-1.09)	1.02(0.85-1.24)
Muslims	0.98(0.73-1.31)	0.98(0.73-1.31)	0.67(0.30-1.53)
Any other	0.90(0.69-1.17)	0.89(0.68-1.17)	0.71(0.39-1.30)

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**Ethnicity**

White	Ref	Ref	Ref
Indian and Pakistani	1.03(0.77-1.37)	1.02(0.77-1.36)	0.73(0.35-1.53)
African Caribbean	<b>0.48</b> (0.36-0.63)	<b>0.47</b> (0.36-0.62)	<b>0.36</b> (0.19-0.66)
Chinese and Other Asian mix	0.92(0.66-1.28)	0.91(0.65-1.26)	0.77(0.33-1.82)
Other	1.01(0.64-1.60)	1.00(0.63-1.59)	0.71(0.27-1.87)

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\*Fully adjusted model included: age, sex, marital status, education, equivalised income, employment, religion and ethnic origin

**Table DS4 Univariate (Model 1), partially adjusted (age and sex )(Model 2)and fully adjusted\* (Model 3) Odds Ratios for High Mental Well-being (WEMWBS 60-70) referenced to Middle-Range Mental Well-being (WEMWBS 43-59)**

	<b>Model 1 Unadjusted OR (95% CI)</b>	<b>Model 2 Partially adjusted OR (95% CI)</b>	<b>Model 3 Fully adjusted OR (95% CI)</b>	<b>P value for linear trend</b>	<b>P for interaction with sex</b>
<b>Age</b>					
16-34	Ref	Ref	Ref	<0.001	
35-54	0.93(0.82-1.05)	0.93(0.82-1.05)	0.96(0.82-1.12)		
55+	<b>1.47</b> (1.31-1.66)	<b>1.47</b> (1.31-1.66)	<b>1.48</b> (1.23-1.79)		
<b>Gender</b>					
Male	Ref	Ref	Ref		
Female	0.98(0.89-1.07)	0.98(0.89-1.07)	0.95(0.64-1.41)		
<b>Marital status</b>					
Single	Ref	Ref	Ref		
Married/Civil partnership/cohabitees	<b>1.17</b> (1.03-1.33)	0.96(0.84-1.11)	1.01(0.80-1.28)		
Separated/Divorced/Widowed	<b>1.23</b> (1.04-1.44)	0.91(0.76-1.10)	0.98(0.71-1.36)		
<b>Education</b>					
NVQ4/NVQ5/Degree or equivalent	Ref	Ref	Ref		
Higher education below degree	1.14(0.97-1.33)	1.07(0.91-1.25)	1.01(0.78-1.30)		
NVQ3/GCE A Level equivalent	0.94(0.81-1.09)	0.98(0.85-1.14)	1.04(0.81-1.34)		
NVQ2/GCE O Level	0.87(0.76-1.00)	0.85(0.74-0.97)	1.00(0.78-1.27)		
NVQ1/CSE other grade equivalent	1.13(0.89-1.42)	1.07(0.85-1.35)	1.26(0.88-1.81)		
No qualification	1.14(0.99-1.31)	0.98(0.85-1.13)	0.97(0.74-1.26)		
<b>Equivalised income</b>					
Highest (>£47794.12)	Ref	Ref	Ref		
Second highest (>27704.92- <=47794.12)	0.90(0.78-1.04)	0.89(0.77-1.03)	<b>0.80</b> (0.64-0.99)		
Middle (>£19117.65-<=27704.92)	0.90(0.78-1.05)	<b>0.85</b> (0.73-0.99)	<b>0.78</b> (0.62-0.99)		
Second lowest (>£11676.65- <=19117.65)	0.88(0.76-1.03)	<b>0.83</b> (0.71-0.97)	<b>0.71</b> (0.55-0.93)		

Lowest (<=£11676.65)	0.98(0.83-1.16)	0.97(0.81-1.15)	0.79(0.58-1.07)
<b>Employment</b>			
In employment	Ref	Ref	Ref
Unemployed seeking work	1.15(0.93-1.44)	1.23(0.98-1.53)	1.34(0.92-1.95)
Retired	<b>1.57</b> (1.41-1.74)	<b>1.37</b> (1.20-1.56)	<b>1.35</b> (1.09-1.69)
Other economically inactive	1.09(0.94-1.26)	1.13(0.97-1.31)	1.05(0.74-1.74)
<b>Religion</b>			
No religion	Ref	Ref	Ref
Christian and other denominators	<b>1.27</b> (1.14-1.42)	<b>1.15</b> (1.02-1.29)	1.12(0.94-1.35)
Muslims	<b>1.39</b> (1.05-1.84)	<b>1.45</b> (1.10-1.93)	1.15(0.64-2.05)
Any other	<b>1.71</b> (1.35-2.16)	<b>1.69</b> (1.33-2.13)	1.00(0.61-1.64)
<b>Ethnicity</b>			
White	Ref	Ref	Ref
Indian and Pakistani	<b>1.62</b> (1.27-2.08)	<b>1.86</b> (1.45-2.39)	<b>2.08</b> (1.23-3.54)
African Caribbean	<b>1.34</b> (1.01-1.62)	<b>1.53</b> (2.63-1.86)	<b>2.24</b> (1.61-3.12)
Chinese and Other Asian mix	1.28(0.95-1.73)	<b>1.47</b> (1.09-1.98)	1.61(0.85-3.05)
Other	1.44(0.96-2.17)	<b>1.73</b> (1.14-2.61)	1.60(0.78-3.29)

0.077

\*Fully adjusted model included: age, sex, marital status, education, equivalised income, employment, religion and ethnic origin



**Supplementary Table DS5 Sex stratified multivariate logistic regression for low and average mental well-being**

Variables	Univariate		Multivariate analysis(fully adjusted model)	
	Male	Female	Male	Female
<b>Age(20 year bands)</b>				
16-34	Ref	Ref	Ref	Ref
35-54	1.37(1.14-1.66)	1.04(0.90-1.21)	2.01(1.56-2.58)	1.33(1.09-1.64)
55+	1.17(0.97-1.41)	0.92(0.79-1.08)	1.25(0.91-1.73)	0.78(0.58-1.04)
<b>Marital status</b>				
Single	Ref	Ref	Ref	Ref
Married/Civil partnership/cohabitees	0.57(0.48-0.68)	0.59(0.51-0.69)	0.71(0.55-0.90)	0.68(0.55-0.84)
Separated/Divorced/Widowed	1.10(0.87-1.39)	1.01(0.84-1.20)	1.11(0.81-1.52)	0.89(0.69-1.14)
<b>Education</b>				
NVQ4/NVQ5/Degree or equivalent	Ref	Ref	Ref	Ref
Higher education below degree	1.18(0.90-1.55)	1.64(1.26-2.13)	1.03(0.75-1.40)	1.51(1.12-2.04)
NVQ3/GCE A Level equivalent	1.67(1.30-2.12)	1.629(1.29-2.03)	1.31(0.98-1.76)	1.20(0.92-1.56)
NVQ2/GCE O Level	1.79(1.43-2.24)	2.25(1.85-2.74)	1.35(1.03-1.77)	1.70(1.35-2.15)
NVQ1/CSE other grade equivalent	2.2191.60-3.06)	2.92(2.12-4.01)	1.46(0.98-2.18)	1.82(1.25-2.64)
No qualification	2.72(2.18-3.40)	2.87(2.35-3.50)	1.97(1.47-2.63)	2.17(1.65-2.84)
<b>Equivalent income</b>				
Highest (>£47794.12)	Ref	Ref	Ref	Ref
Second highest (>£27704.92- <=£47794.12)	0.99(0.76-1.29)	1.16(0.90-1.49)	0.93(0.71-1.22)	1.09(0.84-1.42)
Middle (>£19117.65-<=£27704.92)	1.49(1.15-1.92)	1.68(1.32-2.13)	1.24(0.94-1.63)	1.39(1.07-1.80)
Second lowest (>£11676.65- <=£19117.65)	1.80(1.40-2.32)	2.29(1.82(2.88)	1.41(1.06-1.88)	1.65(1.28-2.13)
Lowest (<=£11676.65)	3.42(2.66-4.01)	3.94(3.14-4.95)	1.92(1.41-2.62)	2.28(1.74-2.97)
<b>Employment</b>				
In employment	Ref	Ref	Ref	Ref
Unemployed seeking work	2.25(1.68-3.00)	1.56(1.18-2.07)	1.52(1.05-2.20)	0.97(0.69-1.35)
Retired	1.38(1.15-1.64)	1.38(1.19-1.62)	1.06(0.79-1.43)	1.25(0.94-1.65)

Other economically inactive	4.00(3.28-4.88)	2.49(2.14-2.90)	2.95(2.25-3.87)	2.07(1.71-2.50)
<b>Religion</b>				
No religion	Ref	Ref	Ref	Ref
Christian and other denominators	1.03(0.88-1.20)	0.94(0.82-1.09)	0.99(0.83-1.20)	0.93(0.78-1.11)
Muslims	0.74(0.46-1.20)	1.18(0.81-1.72)	0.66(0.29-1.50)	1.40(0.75-2.60)
Any other	0.76(0.50-1.16)	1.00(0.70-1.41)	0.69(0.38-1.27)	1.03(0.63-1.67)
<b>Ethnicity</b>				
White	Ref	Ref	Ref	Ref
Indian and Pakistani	0.76(0.48-1.20)	1.30(0.90-1.88)	0.75(0.36-1.58)	1.07(0.60-1.90)
African Caribbean	0.54(0.35-0.83)	0.44(0.30-0.63)	0.37(0.20-0.70)	0.46(0.30-0.72)
Chinese and Other Asian mix	0.85(0.49-1.48)	0.95(0.63-1.44)	0.80(0.34-1.90)	0.54(0.28-1.02)
Other	0.63(0.28-1.40)	1.39(0.78-2.47)	0.73(0.28-1.93)	0.88(0.41-1.90)

**Supplementary Table DS6 Gender stratified multivariate logistic regression for high and average mental well-being**

Variables	Univariate		Multivariate analysis(fully adjusted model)	
	Male	Female	Male	Female
<b>Age(20 year bands)</b>				
16-34	Ref	Ref	Ref	Ref
35-54	0.96(0.80-1.16)	0.90(0.76-1.07)	0.97(0.77-1.23)	0.95(0.77-1.17)
55+	1.52(1.28-1.81)	1.44(1.23-1.68)	1.52(1.15-2.00)	1.45(1.12-1.88)
<b>Marital status</b>				
Single	Ref	Ref	Ref	Ref
Married/Civil partnership/cohabitees	1.21(1.00-1.45)	1.14(0.96-1.36)	1.00(0.79-1.28)	1.03(0.82-1.30)
Separated/Divorced/Widowed	1.32(1.01-1.71)	1.18(0.96-1.45)	0.98(0.70-1.36)	0.94(0.71-1.25)
<b>Education</b>				
NVQ4/NVQ5/Degree or equivalent	Ref	Ref	Ref	Ref
Higher education below degree	1.02(0.82-1.27)	1.28(1.02-1.59)	1.00(0.78-1.30)	1.22(0.94-1.57)
NVQ3/GCE A Level equivalent	0.96(0.77-1.19)	0.94(0.76-1.14)	1.04(0.81-1.34)	1.03(0.81-1.29)
NVQ2/GCE O Level	0.84(0.68-1.03)	0.91(0.75-1.09)	0.99(0.78-1.27)	0.85(0.68-1.05)
NVQ1/CSE other grade equivalent	1.28(0.94-1.73)	0.92(0.63-1.33)	1.26(0.88-1.81)	1.02(0.66-1.56)
No qualification	1.10(0.89-1.35)	1.18(0.98-1.41)	0.97(0.74-1.26)	0.99(0.77-1.28)
<b>Equivalent income</b>				
Highest (>£47794.12)	Ref	Ref	Ref	Ref
Second highest (>27704.92-<=47794.12)	0.83(0.67-1.03)	0.97(0.79-1.18)	0.80(0.64-1.00)	0.95(0.77-1.17)
Middle (>£19117.65-<=27704.92)	0.93(0.74-1.15)	0.89(0.72-1.10)	0.78(0.61-0.99)	0.80(0.63-1.00)
Second lowest (>£11676.65-<=19117.65)	0.90(0.71-1.13)	0.88(0.71-1.08)	0.71(0.55-0.93)	0.79(0.62-1.00)
Lowest (<=£11676.65)	0.98(0.75-1.27)	0.99(0.79-1.24)	0.79(0.58-1.07)	0.88(0.68-1.15)
<b>Employment</b>				
In employment	Ref	Ref	Ref	Ref
Unemployed seeking work	1.18(0.85-1.63)	1.13(0.84-1.53)	1.34(0.92-1.96)	1.25(0.88-1.78)
Retired	1.61(1.38-1.87)	1.54(1.34-1.78)	1.34(1.05-1.71)	1.24(0.98-1.58)
Other economically inactive	1.01(0.77-1.33)	1.13(0.95-1.35)	1.05(0.74-1.48)	1.31(1.06-1.63)

<b>Religion</b>				
No religion	Ref	Ref	Ref	Ref
Christian and other denominators	1.29(1.10-1.50)	1.27(1.09-1.48)	1.12(0.93-1.34)	1.17(0.97-1.39)
Muslims	1.67(1.17-2.46)	1.07(0.69-1.66)	1.15(0.64-2.04)	0.69(0.35-1.35)
Any other	1.53(1.08-2.17)	1.87(1.36-2.57)	1.00(0.61-1.64)	1.41(0.90-2.20)
<b>Ethnicity</b>				
White	Ref	Ref	Ref	Ref
Indian and Pakistani	1.71(1.22-2.40)	1.54(1.07-2.20)	2.09(1.23-3.55)	1.57(0.93-2.64)
African Caribbean	1.72(1.31-2.27)	1.09(0.84-1.41)	2.25(1.61-3.13)	1.04(0.74-1.46)
Chinese and Other Asian mix	1.61(1.04-2.49)	1.08(0.72-1.62)	1.61(0.85-3.06)	1.15(0.65-2.04)
Other	1.00(0.52-1.93)	1.90(1.12-3.24)	1.61(0.78-3.30)	2.58(1.36-4.86)