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| **Table S1. Associations between high-frequency hearing loss and total mortality stratified by selected characteristics (N=11,732)** |
| 　 | HRs (95% CIs) by HFHL | *P* for trend |
| 　 | Normal | Mild | Moderate | Severe |
| Gender |  |  |  |  |  |
| Male | 1 (ref.) | 1.04 (0.69, 1.56) | 1.12 (0.76, 1.66) | 1.14 (0.75, 1.72) | 0.5003 |
| Female | 1 (ref.) | 1.37 (0.87, 2.16) | 1.42 (0.93, 2.17) | **2.07 (1.36, 3.15)** | **0.0026** |
| Age, years |  |  |  |  |  |
| ≤60 | 1 (ref.) | **1.81 (1.19, 2.76)** | **1.75 (1.04, 2.98)** | **2.36 (1.45, 3.83)** | **0.0008** |
| >60  | 1 (ref.) | 1.15 (0.81, 1.63) | **1.76 (1.26, 2.45)** | **2.09 (1.44, 3.01)** | **<0.0001** |
| BMI. kg/m2 |  |  |  |  |  |
| <25 | 1 (ref.) | 1.27 (0.72, 2.22) | 1.56 (0.92, 2.64) | 1.67 (0.95, 2.93) | 0.0543 |
| 25-30 | 1 (ref.) | 1.18 (0.71, 1.97) | 1.27 (0.80, 2.04) | 1.54 (0.93, 2.55) | 0.0924 |
| ≥30 | 1 (ref.) | 1.20 (0.77, 1.87) | 1.09 (0.64, 1.84) | 1.14 (0.67, 1.95) | 0.7042 |
| Smoking status |  |  |  |  |  |
| Never smoker | 1 (ref.) | 1.33 (0.76, 2.34) | 1.72 (0.99, 3.01) | 1.77 (0.98, 3.21) | **0.0316** |
| Former smoker | 1 (ref.) | 0.81 (0.53, 1.25) | 0.94 (0.59, 1.50) | 0.93 (0.57, 1.53) | 0.9312 |
| Current smoker | 1 (ref.) | 1.46 (0.89, 2.41) | 1.33 (0.82, 2.16) | **1.90 (1.13, 3.19)** | **0.0357** |
| Drinking status |  |  |  |  |  |
| Never drinker | 1 (ref.) | 1.25 (0.68, 2.30) | 1.45 (0.90, 2.32) | 1.69 (0.96, 2.98) | **0.0383** |
| Low to moderate drinker | 1 (ref.) | 1.29 (0.83, 2.02) | 1.02 (0.71, 1.47) | 1.04 (0.63, 1.72) | 0.8744 |
| Heavy drinker | 1 (ref.) | 1.07 (0.63, 1.81) | 1.33 (0.80, 2.22) | 1.44 (0.90, 2.29) | 0.0941 |
| Physical activity, times/week |  |  |  |  |
| 0 | 1 (ref.) | 1.20 (0.73, 1.98) | 1.51 (0.88, 2.59) | 1.56 (0.96, 2.54) | **0.0428** |
| 1-2 | 1 (ref.) | 1.13 (0.71, 1.79) | 1.08 (0.73, 1.60) | 1.41 (0.90, 2.22) | 0.1637 |
| ≥3 | 1 (ref.) | 1.63 (0.65, 4.09) | 1.18 (0.35, 4.03) | 1.34 (0.49, 3.67) | 0.7839 |
| Occupational noise exposure |  |  |  |  |
| Yes | 1 (ref.) | 1.30 (0.84, 2.03) | 1.22 (0.76, 1.96) | 1.48 (0.90, 2.42) | 0.1415 |
| No | 1 (ref.) | 1.14 (0.77, 1.70) | 1.31 (0.92, 1.88) | 1.38 (0.99, 1.92) | **0.0428** |
| General health condition |  |  |  |  |
| Very good to excellent | 1 (ref.) | 1.27 (0.75, 2.16) | 1.36 (0.69, 2.68) | 1.55 (0.81, 3.00) | 0.2065 |
| Good | 1 (ref.) | 0.82 (0.53, 1.29) | 1.00 (0.72, 1.40) | 1.08 (0.74, 1.58) | 0.5101 |
| Poor to fair | 1 (ref.) | 1.82 (0.99, 3.35) | 1.75 (0.89, 3.46) | 1.83 (1.00, 3.35) | 0.0985 |
| Adjusted age, gender, race, educational levels, BMI, family income-poverty ratio level, married status, smoking status, drinking status, physical activity, general health condition, healthy eating index, occupational noise exposure, history of diabetes, cardiovascular disease, hypertension and cancer. Abbreviation: HFHL: high-frequency hearing loss; HRs: hazard ratios; CIs: confidence intervals. |
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| **Table S2. Associations between speech-frequency hearing loss and total mortality stratified by selected characteristics (N=11,732)** |
| 　 | HRs (95% CIs) by SFHL | *P* for trend |
| 　 | Normal | Mild | Moderate | Severe |
| Gender |  |  |  |  |  |
| Male | 1 (ref.) | 1.00 (0.70, 1.41) | **1.36 (1.00, 1.84)** | **1.54 (1.13, 2.11)** | **0.0269** |
| Female | 1 (ref.) | **1.46 (1.02, 2.09)** | **1.86 (1.14, 3.03)** | **2.46 (1.49, 4.07)** | **0.0013** |
| Age, years |  |  |  |  |  |
| ≤60 | 1 (ref.) | **1.65 (1.06, 2.58)** | **2.17 (1.38, 3.42)** | **2.65 (1.61, 4.34)** | **<0.0001** |
| >60  | 1 (ref.) | **1.30 (1.06, 1.60)** | **2.00 (1.59, 2.52)** | **2.71 (1.98, 3.71)** | **<0.0001** |
| BMI. kg/m2 |  |  |  |  |  |
| <25 | 1 (ref.) | **1.46 (1.03, 2.05)** | **1.46 (1.02, 2.11)** | **1.80 (1.15, 2.81)** | **0.0052** |
| 25-30 | 1 (ref.) | 1.03 (0.72, 1.48) | **1.54 (1.04, 2.28)** | 1.58 (0.93, 2.69) | **0.0533** |
| ≥30 | 1 (ref.) | 1.09 (0.72, 1.66) | 1.55 (0.91, 2.66) | **2.05 (1.22, 3.44)** | **0.0344** |
| Smoking status |  |  |  |  |  |
| Never smoker | 1 (ref.) | 1.31 (0.88, 1.95) | 1.75 (0.96, 3.20) | **2.33 (1.36, 4.01)** | **0.0092** |
| Former smoker | 1 (ref.) | 1.24 (0.82, 1.86) | **1.61 (1.19, 2.18)** | 1.59 (0.93, 2.71) | **0.0059** |
| Current smoker | 1 (ref.) | 1.04 (0.63, 1.72) | 1.37 (0.80, 2.35) | 1.72 (0.87, 3.40) | 0.1839 |
| Drinking status |  |  |  |  |  |
| Never drinker | 1 (ref.) | 1.14 (0.81, 1.63) | 1.21 (0.86, 1.68) | 1.67 (0.98, 2.85) | 0.0779 |
| Low to moderate drinker | 1 (ref.) | 1.18 (0.79, 1.77) | 1.20 (0.81, 1.78) | 1.62 (0.88, 2.97) | 0.1619 |
| Heavy drinker | 1 (ref.) | 1.13 (0.75, 1.71) | **2.19 (1.33, 3.61)** | 1.59 (0.77, 3.30) | **0.011** |
| Physical activity, times/week |  |  |  |  |
| 0 | 1 (ref.) | 1.29 (0.90, 1.84) | **1.68 (1.09, 2.59)** | **1.97 (1.27, 3.05)** | **0.0046** |
| 1-2 | 1 (ref.) | 1.06 (0.74, 1.50) | **1.54 (1.05, 2.25)** | **2.00 (1.27, 3.15)** | **0.011** |
| ≥3 | 1 (ref.) | 1.08 (0.42, 2.77) | 1.20 (0.48, 2.97) | 1.34 (0.25, 7.27) | 0.7022 |
| Occupational noise exposure |  |  |  |  |
| Yes | 1 (ref.) | 1.13 (0.74, 1.72) | **1.69 (1.24, 2.32)** | **1.87 (1.32, 2.66)** | **0.0002** |
| No | 1 (ref.) | 1.19 (0.92, 1.55) | **1.48 (1.00, 2.20)** | **1.92 (1.26, 2.93)** | **0.0093** |
| General health condition |  |  |  |  |
| Very good to excellent | 1 (ref.) | 1.00 (0.64, 1.56) | 1.28 (0.76, 2.14) | 1.65 (0.91, 3.02) | 0.1967 |
| Good | 1 (ref.) | 1.09 (0.81, 1.47) | **1.63 (1.22, 2.20)** | **1.83 (1.23, 2.71)** | **0.0008** |
| Poor to fair | 1 (ref.) | 1.34 (0.77, 2.31) | 1.74 (0.95, 3.19) | **1.99 (1.03, 3.84)** | **0.0449** |
| Adjusted age, gender, race, educational levels, BMI, family income-poverty ratio level, married status, smoking status, drinking status, physical activity, general health condition, healthy eating index, occupational noise exposure, history of diabetes, cardiovascular disease, hypertension and cancer. Abbreviation: HFHL: high-frequency hearing loss; HRs: hazard ratios; CIs: confidence intervals. |
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**Figure S1.** Dose-response associations between hearing thresholds at different frequencies and total/cause-specific mortality (N=11,732). Adjusted age, gender, race, educational levels, BMI, family income-poverty ratio level, married status, smoking status, drinking status, physical activity, general health condition, healthy eating index, occupational noise exposure, history of diabetes, cardiovascular disease, hypertension and cancer. Abbreviation: HR: hazard ratio; CI: confidence interval.