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%************************************************************* ;
%************ OSDI Data Reshape and Calculation ************** ;
%************************************************************* ;
/*************************************************
Purpose: derive variables below:
osi_symp        OSDI ocular symptoms score (0-100, higher is worse)
osi_vision      OSDI visual-related function (0-100, higher is worse)
osi_trigger     OSDI environmental trigger (0-100, higher is worse)
calc_osdi       OSDI total score (0-100, higher is worse)
*************************************************/
/*
parameter:
1. indata: input dataset name
2. outdata: output dataset name
*/

%macro proc_OSDI(indata,outdata) ;
/*set new value of each question as 5 minus original value of the question*/
data temp_osdi0 ;
        set &indata;
        *format osilight2 osigritty2 osisoreeyes2 osiblurred2 osipoorvision2 osireading2
osidriving2 osicomputer2 ositv2 osiwindy2 osilowhumidity2 osiairconditioned2 osdif.;
        array osdis[12] osilight--osiairconditioned ;
        array osdis2[12] osilight2 osigritty2 osisoreeyes2 osiblurred2 osipoorvision2
osireading2 osidriving2 osicomputer2 ositv2 osiwindy2 osilowhumidity2
osiairconditioned2 ;
        do i=1 to dim(osdis);
                if osdis[i] = 1 then osdis2[i] = 4;
                else if osdis[i] = 2 then osdis2[i] = 3;
                else if osdis[i] = 3 then osdis2[i] = 2;
                else if osdis[i] = 4 then osdis2[i] = 1;
                else if osdis[i] = 5 then osdis2[i] = 0;
                else if osdis[i] = 99 then osdis2[i] = 99;
        end;
        label osilight2='1. Eyes that are sensitive to light?';
                label osigritty2='2. Eyes that feel gritty?';
                label osisoreeyes2='3. Painful or sore eyes?';
                label osiblurred2='4. Blurred vision?';
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            label osipoorvision2='5. Poor vision?';
            label osireading2='6. Reading?';
            label osidriving2='7. Driving at night?';
            label osicomputer2='8. Working with a computer or bank machine (ATM)?';
            label ositv2='9. Watching TV?';
            label osiwindy2='10. Windy conditions?';
            label osilowhumidity2='11. Places or areas with low humidity (very dry)?';
            label osiairconditioned2='12. Areas that are air conditioned?';
        drop  osilight osigritty osisoreeyes osiblurred osipoorvision osireading osidriving
osicomputer ositv osiwindy osilowhumidity osiairconditioned i;
run;


/*****************************************************
  OSDI Calculation
*****************************************************/
data &outdata;
        set temp_osdi0;
        label osi_symp="OSDI ocular symptoms" osi_vision="OSDI vision related function"
osi_trigger="OSDI enviroement triggers" calc_osdi="OSDI total score";
        array symp[3] osilight2         osigritty2 osisoreeyes2;
        array vision[6] osiblurred2 osipoorvision2 osireading2 osidriving2 osicomputer2
ositv2;
        array trigger[3] osiwindy2 osilowhumidity2 osiairconditioned2;
        array osdis[12] osilight2--osiairconditioned2;
        osi_symp=0;osi_vision=0;osi_trigger=0;osdi=0;symp_count=0;vision_count=0;trigge
r_count=0;nosdi=0;
        do i=1 to dim(osdis) ;
                if osdis[i] in (0,1,2,3,4) then do;
                nosdi=nosdi+1;
                osdi=osdi+osdis[i];
                end;
        end;
        do i=1 to dim(symp);
                if symp[i] in (0,1,2,3,4) then do;
                symp_count=symp_count+1;
                osi_symp=osi_symp+symp[i];
                end;
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        end;
        do j=1 to dim(vision);
                if vision[j] in (0,1,2,3,4) then do;
                vision_count=vision_count+1;
                osi_vision=osi_vision+vision[j];
                end;
        end;
        do k=1 to dim(trigger);
                if trigger[k] in (0,1,2,3,4) then do;
                trigger_count=trigger_count+1;
                osi_trigger=osi_trigger+trigger[k];
                end;
        end;
        if symp_count^=0 then osi_symp=osi_symp/(4*symp_count)*100; else osi_symp=.;
        if vision_count^=0 then osi_vision=osi_vision/(4*vision_count)*100; else
osi_vision=.;
        if trigger_count^=0 then osi_trigger=osi_trigger/(4*trigger_count)*100; else
osi_trigger=.;
        if nosdi^=0 then calc_osdi=25*osdi/nosdi; else calc_osdi=.;
        *format osdi_score calc_osdi osdif. ;
        drop i j k redcap_repeat:;
run;

%mend proc_OSDI;
```