Cognitive & behavioural mechanisms in insomnia-related unintentional sedative/hypnotic overdose

1. Anterograde amnesia, lowered hypervigilance, • relief (on hypnotics): because insomnia = biased recall of waking/stage 1,2 sleep
2. Attribution shift: distrust brain, rapidly trust hypnotics for sleep instead
3. Habit formation: cue(sleeplessness) • action (medicate) • reward (‘sleep’ & amnesia)
4. Drug tolerance develops • normal homeostatic drive- perceived as intermittent reinforcement of sporadic “good sleeps”
5. Increased ad hoc self-medicating (safety-seeking behaviours escalated to "guarantee" sleep reward) • amnesia = old risk mounts

1. Australian Bureau of Statistics 2016 Analysis of drug deaths by single drug type
   - benzodiazepines were the most common substance present in either accidental or intentional drug induced deaths in 2016, being identified in 663 (36.7%) OD deaths.
   - Average 75% of deaths were accidental.
   - Benzodiazepines: for anxiety and insomnia treatment, prone to tolerance and addiction.
   - Particularly dangerous if taken with other CNS-sedating substances.
   - In over 98% of 2016’s benzodiazepine-present deaths they were mixed with other sedative drugs including alcohol.
   - Apart from 1999, benzodiazepines have consistently been the most common single substance identified on toxicology.
   - In 2017, 1,612 unintentional drug-induced deaths out of 2,162 deaths. In 2002, was 903 unintentional drug-induced deaths.

2. Analysis of 20 years sedative/hypnotic prescribing in Australia (Islam et al 2012)
   - 174,080,904 scripts were recorded in the 20 years to 2011.
   - Most-prescribed: Temazepam (35% - prescribed for insomnia, then Diazepam 23% - anxiety/insomnia)
   - Per-script DDD (WHO-defined daily doses) modest but steady increase since 1998
   - BEACH study prescribing data:
     - 90% presenting with insomnia prescribed a medication (majority are benzodiazepines).
     - Temazepam is most-preferred drug in primary care (50%), then melatonin (less than 10%).

3. Likelihood of short-term sedative/hypnotic use becoming longterm dependence:
   - Malcolm Lader. Kings College Addiction Research Centre (2011) "difficulty in preventing short term (benzodiazepine) use from extending indefinitely with the risk of dependence.
   - Contributors:
     a) perception of medication ‘short-circuiting’ insomnia habit amongst prescribing professionals (medication fulfilling ‘habit loop’ formation essentials).
     b) duration of insomnia & blurred delineation of ‘transient’(1-2 days), ‘short term’ (3-4 weeks) and “chronic” insomnia (3 months+)
   - c) misattributions of sleep success by medication users & above cycle.

4. Previous SSC Findings:
   - 26 subjects (primary or secondary insomnia assessment) sought insomnia treatment (age range 26-71 years; 12 men 14 women).
   - 88% strongly agreed: Insomnia causes serious physical health consequences (IQ of F2:Worry/Helplessness factor, DBAS-16).
   - Above also significant correlation with Insomnia Severity (F1-2.07, p = .048)
   - 80% strongly agreed: Poor sleep will interfere with next day functioning (IQ of F1: consequences factor)
   - 64% strongly agreed: Poor daytime energy & functioning due to poor sleep (IQ2 of F1: consequences factor)
   - 61% strongly agreed: Better off taking sleeping pill to function than having poor sleep (IQ of F4 medication), but;
   - Only 13% agreed: “medication is probably the only solution”. All others unsure or disagreed

5. Current Question:
   - Can CBTi instil increased psychological flexibility and mastery, & reduce sleep medication dependence & overdose risk?

6. Method:
   - The current LetSleepHappen/Sydney Sleep Centre research targets attribution shifts in six insomnia patients undergoing tapering schedules in an attempt to reduce safety-seeking self-medicating that increases risk of accidental overdose.
   - The six patients seek to reduce sleep medication, after 5-20 years dependence, with slow tapering schedules (ranging 6-18 months, over 6-10 CBTi sessions).
   - Short-term detox sites rarely offer CBTi to shift faulty beliefs & expectations maintaining insomnia, leading to high post-discharge relapse rates when patients suffer REM-sleep rebound and sleeplessness, reinforcing catastrophic beliefs.

   Measures: DBAS-16 (Morin et al, 2007), ISI (insomnia Severity Index) and DASS-21 (Depression, Anxiety, Stress Scale). 2-week Sleep diary. Intervention (ongoing): 6-10+ sessions over 5-20 CBTi sessions.

   Targeting sleep beliefs/expectations change. Data collection ongoing.