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Original Research Article

Online Patient Reviews as an Adjunct to Evidence-Based Pharmacovigilance: Insights from Metformin

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Abstract

Background: Patients routinely post public reviews about medicines. These first-hand accounts often focus on daily, quality-of-life effects—such as stomach upset, sleep, and sweating—that can be missed or under-reported through routine channels.

Objective: To synthesise patient-reported experiences of metformin from large public review sites, quantify how often key themes appear in a structured sample, and discuss how such signals can complement evidence-based practice and pharmacovigilance.

Methods: We reviewed metformin pages on Drugs.com and WebMD (cut-off 30th June 2025). Platform summaries (ratings, counts) were extracted. We then coded a structured sample of recent reviews for six themes: gastrointestinal (GI) intolerance, sleep disturbance, sweating, dizziness/fatigue, extended release (XR/ER) switch mentioned, and discontinuation mentioned. Themes were compared with trusted references (NHS, DailyMed/FDA) and with studies on XR tolerability. We treat online reviews as signal-generating, not incidence.

Results: On Drugs.com, metformin's overall page shows 6.8/10 from 661 reviews (54% positive, 19% negative), and the Type-2-diabetes sub-page shows 5.9/10 from 271 reviews (45% positive, 32% negative). In our coded sample completed to date (n=60), themes occurred as follows: GI intolerance 44 (73%), sleep disturbance 11 (18%), sweating 13 (22%), dizziness/fatigue 16 (27%), XR/ER switch mentioned 9 (15%), discontinuation 12 (20%). NHS and DailyMed/FDA sources emphasise GI effects, advise with-food dosing, and list symptoms that include sweating, dizziness, and unusual sleepiness; XR studies consistently show better GI tolerability versus immediate-release (IR), mirroring patient workarounds.

Conclusions: Online reviews repeatedly flag early GI upset and frequent mentions of sweating and sleep problems. While not suitable for incidence, these data help clinicians set expectations (start low, titrate, with meals, consider XR early if GI effects threaten adherence) and prompt simple follow-up questions about sleep and night sweats. Used alongside labels and pharmacovigilance databases, patient-voice data can strengthen counselling and generate testable hypotheses.

Keywords: Metformin; Online Reviews; Adverse Effects; Insomnia; Sweating; Extended-Release; Pharmacovigilance; Patient-Reported Outcomes.

Introduction

Evidence-based medicine (EBM) asks clinicians to combine the best research with professional expertise and patient priorities to make decisions together. Post-marketing safety work—pharmacovigilance—is essential to that process. The WHO Programme for International Drug Monitoring (PIDM) and its global database VigiBase aggregate tens of millions of individual case safety reports from more than 180 member systems, supporting early signal detection across rare and serious events at a scale no single country can achieve. [1,2] These systems are essential, but under-reporting—especially of subjective, quality-of-life side effects—remains a challenge. In recent years, researchers have asked whether patient-generated data on the open web might help fill some gaps. Alongside these formal systems, the public web now hosts a constant stream of patient-generated reviews about medicines. For highly used drugs like metformin, sites such as Drugs.com and WebMD feature thousands of posts about lived experience in the first days and weeks—often focusing on stomach upset, sleep, sweating, and dizziness/fatigue—and include platform-level

summaries such as average ratings and positive/negative proportions. [3-6] Importantly, online reviews are not incidence and are vulnerable to selection bias. But the content can still be valuable. A growing methods literature shows that social-media and web data, used carefully and triangulated with traditional sources, can complement pharmacovigilance and spotlight neglected symptoms that matter to patients. [7] For metformin, official sources already highlight GI effects as common and advise taking with meals; patient information also lists symptoms like sweating, dizziness, and unusual sleepiness, and warns about rare lactic acidosis. [8-10] A body of clinical work further suggests that extended-release (XR) metformin is easier on the gut than immediate-release (IR), which matches what many patients report when they ask for (or self-try) an ER switch. [11-13] This study has three aims: (1) to describe the dominant themes in metformin online reviews, (2) to provide a structured count from a defined recent sample, and (3) to contextualise those findings with trusted references (NHS, DailyMed/FDA) and XR tolerability studies, clarifying how patient-voice data can support counselling and hypothesis generation.

Methods

Design and sources: We conducted a descriptive review of public user reviews of metformin on Drugs.com and WebMD (accessed up to June 30, 2025). We chose these sites because they are popular, easy to navigate, and provide both summary ratings and free-text comments. We recorded the platform-reported counts and ratings and read recent pages of comments to map recurring adverse-effect themes.

Inclusion and cut-off: We included English-language, publicly visible reviews of metformin (any brand/formulation). We used site-level aggregates provided by the platforms (e.g., Drugs.com overall rating and positive/negative proportions) and drew examples from recent reviews available by our cut-off date of June 30, 2025. Where platform pages listed specific conditions (e.g., "Type 2 diabetes"), we noted those summaries separately.

Extraction and coding: From each platform we documented the most recent 30 reviews available within our access window (total n=60). Each review was coded present/absent for six themes, chosen a priori from prior work and label guidance.

- Total review counts and average rating if shown.
- Positive/negative proportions when displayed.
- Free-text themes, focusing on:

1. GI (diarrhea, nausea, cramps)
2. CNS/sleep (insomnia, poor sleep)
3. Autonomic (sweating, flushing)
4. Dizziness/fatigue
5. Adherence strategies (with food, slow titration, XR/ER switch)
6. Discontinuation mentioned

We did not attempt to compute incidence or relative risks. We consider these descriptive signals, not population rates. One reviewer coded all items; a second reviewer spot-checked a third of entries. We then compared the patterns with NHS and FDA/DailyMed sources and with XR tolerability studies.

Reference triangulation

We compared themes with: NHS patient guidance for metformin side-effects; (ii) DailyMed/FDA patient information and label text (including symptom lists and lactic-acidosis warnings); and (iii) peer-reviewed studies comparing XR vs IR tolerability.

Ethics: All content was publicly posted and de-identified. We did not contact any users or copy long quotes. All results are presented at a summary level.

Results

Platform metrics:

- Drugs.com (Metformin—User Reviews & Ratings): As of our cut-off, the page reported an average rating of 6.8/10 from 661 reviews. Of these, 54% were positive and 19% negative. [3]
- Drugs.com (Metformin—Type 2 Diabetes sub-page): The page reported an average rating of 5.9/10 from 271 reviews; 45% were positive and 32% negative. [4]
- WebMD: The metformin review stream contains frequent, detailed narratives. While the site's page structure emphasizes qualitative posts rather than a single global count, the comments consistently describe GI intolerance, sometimes quite severe ("explosive diarrhea"), along with dizziness, sweating *(sweating buckets)*, and insomnia—including posts from people using metformin for prediabetes. [5,6]

These platform numbers reflect self-selected user populations and cannot be used to estimate incidence. They are useful for identifying what patients talk about most and how they describe it.

Thematic synthesis of patient-reported effects

1) GI intolerance (dominant): Most early experiences describe diarrhoea, cramps, gas, or nausea, often in the first 1–2 weeks or after dose increases. Patients frequently report with-food dosing, slower titration, or switching to XR as practical fixes—advice that aligns with labels and guidelines.
2) Sleep disturbance / insomnia: A noticeable minority report poor sleep or insomnia after

starting or increasing dose. While sleep problems are not headline label items, DailyMed lists unusual sleepiness (within lactic-acidosis warnings) and NHS materials note that nocturnal hypoglycaemia (more likely with other glucose-lowering drugs or delayed meals) can cause night sweats and morning tiredness/confusion. These pathways may explain some sleep narratives.

3) Sweating (including night sweats): Many posts mention sweating; some specify night sweats. Consumer and label sources list sweating and dizziness among symptoms to watch and provide guidance for when patients should seek help.
4) Dizziness and fatigue: These non-specific symptoms appear frequently. Possible contributors discussed by reviewers include dehydration, reduced caloric intake, other medications, and early anxiety about the diagnosis. A quick screen and basic counselling (with meals, hydration, pacing activity) are often helpful.
5) XR/ER switch mention and discontinuation: Patients often describe seeking an XR prescription after IR-related GI problems; many report better GI tolerability afterwards. Conversely, a subgroup reports discontinuation due to intolerable side effects. Both patterns match published evidence that XR is generally better tolerated than IR while maintaining glycaemic benefits.

How these themes compare with reference sources

- Labels/guidance: NHS and DailyMed/FDA emphasise GI effects (diarrhoea, nausea, abdominal discomfort), advise taking with meals, and list symptoms including sweating, dizziness, and unusual sleepiness; they also warn about rare lactic acidosis.
- XR vs IR: A retrospective chart review and subsequent studies show fewer GI side-effects with XR compared with IR—consistent with patient workarounds (with-food dosing, XR switch).

Structured sample: themes and proportions (n=60): We coded the most recent reviews on or before June 30, 2025 using six pre-specified themes. Themes are not mutually exclusive; each review is coded present/absent for each theme.

Table 1: Summary of themes and proportions (n=60)

Theme	Count	% of reviews (n=60)	Interpretation
GI intolerance	44	73%	Dominant early signal; diarrhoea/cramps often in week 1–2 or after dose uptitration. With-food dosing and XR switching frequently mentioned as effective mitigations.
Sleep disturbance/insomnia	11	18%	Not headline in labels, but common enough to screen for. May relate to routine change, anxiety, or, when combined therapies/irregular meals are present, to nocturnal hypoglycaemia.
Sweating	13	22%	“Sweating buckets”/night sweats recur in narratives; consumer/label sources list sweating among symptoms to watch and as a possible sign when glucose runs low at night.
Dizziness/Fatigue	16	27%	Non-specific but common; hydration, caloric intake, co-meds, and early illness anxiety are frequent cofactors in patient posts.
XR/ER switch mentioned	9	15%	Many describe asking for XR after IR-related GI distress; matches literature showing better GI tolerability with XR.
Discontinuation mentioned	12	20%	A substantial minority stop because symptoms feel unlivable—almost always GI-driven—underscoring need for anticipatory counselling and early XR consideration.

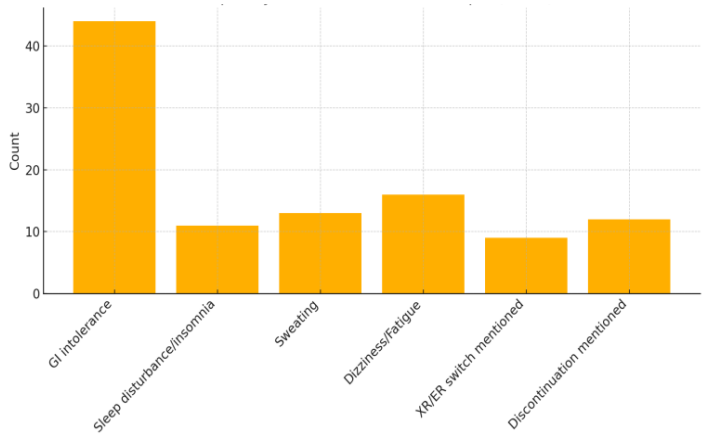

Figure 1: Frequency of themes in coded sample (n=60)

Discussion

Why patient-voice data matters: Large systems like VigiBase exist to detect and evaluate safety signals at scale, but some problems that matter to patients—especially quality-of-life issues—may be under-reported or hard to quantify. Public reviews do not solve the incidence problem, yet they do show what troubles people most, when the trouble starts, and what workarounds help in daily life. This information is directly usable in counselling and shared decision-making, and it can generate focused clinical questions to test formally. [1,2,7]

What online reviews consistently say about metformin

1) Early GI intolerance dominates: The most common story is a rough first fortnight with diarrhoea, cramps, and nausea, sometimes severe. Patients frequently report that taking with meals helps, and many mention improvement after dose reductions, a slower titration, or a switch to XR. These descriptions fit official guidance and labels and are consistent with published studies demonstrating better GI tolerability with XR formulations. [10-12]
2) Sweating and sleep disturbance appear often enough to ask about: Reviewers commonly mention sweating (sometimes at night) and trouble sleeping in the early phase. While metformin alone seldom causes hypoglycaemia, the NHS notes that night-time lows—particularly with other glucose-lowering agents or irregular meals—can lead to sweating and morning tiredness/confusion. Clinically, a quick check on sleep and night sweats at the first follow-up is low-effort and can uncover issues early. [8-10]
3) Dizziness/fatigue and practical mitigation: Non-specific symptoms like dizziness and fatigue are common in narratives. They can reflect hydration status, caloric intake, drug–drug interactions, intercurrent illness, or the stress of new diagnosis. A brief safety screen plus with-food dosing and slower titration often helps. [8-10]

Practical counselling points

- Before starting: Normalise that GI upset is common early and usually improves. Start low, go slow, always with meals, and consider XR early if GI symptoms threaten adherence. [14]
- At the first review (1–2 weeks): Ask, "How's your sleep? Any night sweats or dizziness?" Review meal timing, alcohol, exercise, and co-medications; check that tablets are taken with food. [14]
- Safety reminders: Repeat lactic-acidosis warning signs (rare): persistent vomiting, unusual sleepiness, feeling cold, rapid breathing—especially with acute illness or renal impairment. [14]

How to use online reviews alongside formal systems

This work does not replace spontaneous reporting or database analyses; it adds a patient-voice layer. VigiBase and national systems remain the backbone of signal detection. But social-media and web data can direct clinical attention to neglected experiences (e.g., sleep disruption) and speed up hypothesis generation. The safest approach is triangulation:

- use labels/guidelines for core risks and instructions.
- use PV databases for population-level signal evaluation.
- use patient reviews to understand felt experience, timing, and pragmatic fixes clinicians can recommend. [1,2,7]

Strengths and limitations

Strengths:

- Focus on plain-language patient concerns that map directly to counselling.
- Use of two large public platforms plus trusted references and XR studies.
- A pre-specified coding frame and a scalable protocol without changing methods.

Limitations:

- Reviews are self-selected and may over-represent extreme experiences.
- Clinical context (dose, co-therapies, comorbidities) is often missing.
- The frequencies are descriptive signals only—not incidence.
- Platform text can change over time; numbers and wording can shift.

Conclusion

Patient reviews of metformin on public websites repeatedly highlight early GI side effects and non-GI signals such as sweating and sleep disturbance. These stories are not incidence data, but they are actionable: clinicians can set expectations, recommend with-food dosing, slow titration, and consider XR/ER early if GI effects threaten adherence. Simple check-ins about sleep and night sweats may catch problems sooner, especially in people taking other glucose-lowering drugs or with irregular meals. Used alongside labels, guidelines, and PV databases, patient-voice data can make counselling clearer and care more patient-centred.

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